COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Boston, Mass., and additional mailing offices © 1976 by Computerworld, Inc.

Price: $15/year May 10, 1976 Vol. X, No. 19

Court Stops FCC Interconnection Plan

Program Halted At Last Minute

By Ronald A. Frank
Of the CW Staff

RICHMOND, Va. – The Federal Communications Commission's (FCC) plan to initiate a registration/certification program for use of noncarrier equipment on the telephone network was halted at the last minute by a federal court order.

Scheduled to take effect May 1, the FCC program was "stayed and enjoined pending petitions for review" by Judge H.E. Widener Jr., U.S. circuit judge for the Fourth Circuit Court of Appeals here.

Citing the situation as an exceptional case, Widener said the two FCC orders approving the certification/registration program would mean "telephone subscribers throughout the country are going to have to pay for any costs."

If allowed to take effect, the rating structure of the telephone companies would have to be changed at a cost of "countless millions." The cost of changing the rating structure is irretrievable and must be paid by the subscribers, Widener said in his order.

"Anticipated future savings" which those favorable to the program had claimed would result are "speculative at best," the order said.

"Nothing before me indicated any consideration of the effect [of the program] on the ordinary subscriber's phone bill," Widener said.

Required DAA Plan Ended

The FCC-approved program would have replaced the currently required Bell Data Access Arrangement (DAA) by allowing noncarrier equipment to be directly connected to the dial-up phone network after

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Users' Options At Stake: Wiley

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. AT&T and other members of the telephone industry have launched a wide-ranging attack "to sweep away every last vestige" of recent Federal Communications Commission (FCC) policy, according to Richard E. Wiley, chairman of the commission.

Delivering the keynote address at the International Communications Association's (ICA) annual conference here last week, Wiley said the FCC has basically tried to "provide the American consumer with telecommunications options and alternatives" in two limited areas.

He defined these areas as customer-supplied terminal equipment and private line services.

In the terminal area, it is the FCC's conviction that "citizens should have the right to use their telephone system in a manner privately beneficial but not publicly detrimental"; in the private line area, "we believe consumers should be permitted to enjoy the communications options available from alternative sources," Wiley said.

Protecting Consumer's Options

"Protecting the American consumer's right to decide how his communications needs will best be met, and who can best meet them, undergirds the FCC's decisions permitting competition in these two well-defined markets," he told the conference.

As a result of FCC-fostered competition, the old monopolistic philosophy of "you can have it if we choose to offer it" has given way to a new responsiveness of the part of the established carriers, Wiley said.

The needs of consumers and small businessmen which previously might have been overlooked are therefore now pursued energetically by the telephone industry, he explained.

"I say all this not to denigrate the telephone industry, for which I have a profound respect and admiration," Wiley said, but competition has made AT&T and its partners "more vigorous public servants."

Commenting on claims that the interconnection of customer-supplied equipment and specialized carriers would harm the telephone network, Wiley said that "after nearly a decade of experience . . .

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In Latest Six-Month Period

Error Rate for SSI Checks Hits 23.7%

By Edith Holmes
Of the CW Staff

WASHINGTON, D.C. – Almost one-quarter of the computer-generated checks sent to recipients of the Social Security Administration's (SSA) newest federal welfare program in the last half of 1975 were wrong, the agency's Quality Assurance Program has determined.

The latest statistics for the SSA's two-year-old program for blind, aged and disabled adults showed a 23.7% error rate in payments made to a sample of the 4.3 million people covered under Supplemental Security Income (SSI).

With the study 99% complete, this error rate matched rather than improved upon the record of the SSI system in its earlier stages, despite expectations for improvement by the end of last year, according to SSA Commissioner James B. Cardwell.

Cardwell told the House Ways and Means Oversight Subcommittee chaired by Rep. Charles A. Vanik (D-Ohio) here recently that he and others in SSA anticipated an improvement in SSI's error rate because a computerized hookup to the regular Social Security benefits of clients, designed to check clients' real needs and reduce their benefits accordingly, became operational during this period.

SSI's interface with the rest of the benefits offered by SSA programs may actually account for an improvement in the error rate, but "there may be something that is offsetting it," Cardwell said before the committee currently investigating SSI.

Commissioner Puzzled

The commissioner indicated he was puzzled by the only "marginally lower" error rate. Some of the errors – up to 40% of them – were due to "client behavior" and will probably continue to be present in this national attempt, begun Jan. 1, 1974, to simplify and improve on state, county and city efforts to provide welfare for adults, he suggested.

The balance of the SSI errors could still be attributable to SSA's elaborate computer system, under study by various congressional committees – including Vanik's oversight committee and the House Government Operations Subcommittee, chaired by Rep. L.H. Fountain (D-N.C.), which commissioned the General Accounting Office (GAO) audit of the SSA's computer operations now in preliminary report form [CW, April 26].

Quality Assurance figures for July 1 to Dec. 31, 1975 showed the 23.7% error rate breaks down to 9.8% in SSI overpayments, 7.8% in ineligible payments and 6.1% in underpayments to recipients.

The overall error rate for the last six months of 1974 was 24.8%; for the first six months of 1975, it was 24.4%, according to the SSA program's numbers.

Cardwell and other agency heads expected that figure to drop to 19% or less once the computerized records of people who receive regular Social Security benefits were linked to SSI records. Because of eleventh-hour changes in the SSI program by Congress and management problems in SSA, the Bureau of Supplemental Security Income and the Bureau of Data Processing, both within the SSA, were

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NCC '76 Innovating With Eight Seminars On DP Development

NEW YORK – Eight full-day seminars on professional development will be presented for the first time at the National Computer Conference (NCC), scheduled for June 7-10 here.

The seminars will stress cost-effective computer usage and increasing professional skills, according to the American Federation for Information Processing Societies (Afips), NCC's sponsor.

On June 8, "Structured Programming in Cobol" and "Computer Networks" will be presented. The seminar on structured programming will be conducted by Robert G. Abbott, a staff consultant to Yourdon, Inc. and will be concerned with top-down design/implementation and "GOTO-less" programming. Included in the seminar will be a survey of program-

(Continued on Page 2)

Lack of Rapport Seen Impeding DP Progress in Social Services

By Catherine Arnst
Of the CW Staff

CHICAGO – The typical DP staff doesn't have an understanding of the social services staff – and vice versa – which has slowed the process of bringing technological change to the social services area, according to E. Bentley Lipscomb, deputy commissioner of the South Carolina Department of Social Services.

The managers in social services are "social work professionals who moved up through the ranks and had little contact with automated techniques; they tend to be individual case-oriented and are unfamiliar with computer technology," he said at the Human Services Information Systems Conference here recently.

Giving himself as proof of Lipscomb's statement, Earl Beatt, executive director of the Minneapolis Family and Children Services, said: "Frankly, I'm intimidated by a systems person. I came up through the ranks."

Currently, many managers are not good at articulating their needs to their DP staff; they often get data and results that they don't need and that lacks necessary information, Lipscomb said.

What is needed by social services agencies is a "broker" between social services-oriented personnel and the DP staff – "someone in the middle who can act as a linkage agent between the two entities so they can meet further down the road," he said.

The biggest issue facing the social services manager today is "accountability," Libscomb said. "He must be willing to develop a system that will provide accountability and he must work more closely with the DP staff to develop one."

Coverage of the Human Services Information Systems Conference continues on Pages 6 and 7.

Too often the social services agency uses a method where "planning follows action," Beatt said. This method won't work now when the theme of a social services agency is that "services must follow the budget," he continued.

"There is a danger of overuse of data processing for technical excellence," Beatt warned.

"Readily retrievable information can lead to overrecording for nonuses. We collect lots of data, store it, but don't use it," he said.

Some questions a social services man-

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Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass 02160.

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50 cents a copy; $15 a year in the U.S., $23 a year for Canada and PUAS, all other foreign, $40 a year. Four weeks notice required for change of address. Please allow six weeks for new subscription service to begin.

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Computerworld can be purchased on 35mm microfilm in half-volumes (six-month periods) through University Microfilm, Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich 48106. Phone (313) 761-4700

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POSTMASTER: Send Form 3579 (Change of Address) to Computerworld Circulation Dept., 797 Washington St., Newton, Massachusetts 02160. ac

Looking Ahead To NCC

NCC Sets Eight Development Seminars

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mer productivity techniques.

Marshall D. Abrams of the National Bureau of Standards will present "Computer Networks." It is intended to provide better understanding of the utilization and management of contemporary computer networks.

Three seminars will be presented on June 9: "Design of On-Line Systems," "Management Auditing of Computer Operations" and "Micrographics and DP."

"Design of On-Line Systems" will be conducted by Walter E. Simonson, associate director for DP at the U.S. Bureau of the Census, and will focus on types of on-line systems, the on-line environment, software, files and data bases and error-recovery considerations.

The seminar on management auditing will be headed by Harold J. Podell, an audit manager with the U.S. General Accounting Office. The session will emphasize recognizing the symptoms which indicate potentially costly problems and the impact of the computer on the entire operation of the organization.

"Micrographics and DP" will present a survey of microfilm technology, micrographic applications and expectations for the future. It will be lead by Terrence Koyle and John Mitchell, marketing specialists for Eastman Kodak Co.

"Structured Design," "Management of Software Engineering" and "Computer Applications for Learning Technology" will be presented on June 10.

'Peopleware' Problems

Edward Yourdon, chairman of Yourdon, Inc., will provide a briefing on program design and system design, including an examination of the program development process, in "Structured Design."

The session on software engineering will analyze "peopleware" problems and the future of software engineering along with the present objectives. The seminar leaders will be Walter Simonson and Paul Oyer, president-elect of the Federal ADP Users Group.

An overview of instruction systems development will be presented in "Computer Applications for Learning Technology," which will be aimed at application system designers, marketing personnel and engineers. Raymond G. Fox of the IBM Federal Systems Division will conduct this seminar.

Registration for the seminars is available only to those who preregister either for the entire '76 NCC or at least one day of the regular conference program. Attendance at each will be limited to 100 persons.

The separate registration fee for each seminar is $50, which includes complete course material and reference information. Further information can be obtained from Afips at 210 Summit Ave., Montvale, N.J. 07645.

Non-DPers in Small Businesses Getting Own Day at Conference

NEW YORK – The National Computer Conference (NCC) is branching out in a new direction this year with a full-day seminar on DP for nontechnical managers of small businesses on June 8. NCC will be held here June 7-10.

"This seminar is intended for the management of small organizations of less than 40 employees who are currently using manual methods. It assumes no specific technical DP background on the part of participants," according to the American Federation of Information Processing Societies (Afips), NCC's sponsor.

The seminar will be conducted by Verna Danner of Computer Learning Center. It will include a survey of available equipment and services, specific applications examples, considerations of the effects of DP equipment and services on existing personnel, an assessment of new skills required and the retraining of personnel plus an analysis of possible problems and pitfalls.

There will also be a special guided tour of the exhibits with emphasis on the applications covered within the seminar.

The registration fee for this seminar is $75, which includes complete course material plus access to all four days of the NCC exhibit program.

Further information can be obtained from Afips at 210 Summit Ave., Montvale, N.J. 07645.

Registration Deadline at Hand

NEW YORK -- The deadline for advance registration for the 1976 National Computer Conference (NCC) is May 14. The conference, sponsored by the American Federation of Information Processing Societies (Afips), will be held here June 7-10.

Attendees who register in advance for the full conference will receive an NCC Bicentennial Card which will provide access to all four days of the program, including exhibits, at a savings of $15 over the on-site, full-conference registration fee.

Advance registrants will also receive a copy of the conference proceedings and the opportunity to attend eight professional development seminars available only to advance program registrants. Ten dollars of the registration fee may also be applied to first-time membership in any of the 15 Afips constituent societies.

Advance registration costs $60. Preregistration for one day of the conference programs and exhibits is $25; for all four days on an exhibits-only basis the price is $25; one day of the exhibit program is $10. The postconference price of a copy of the proceedings is $50.

For further information contact Afips at 210 Summit Ave., Montvale, N.J. 07645.

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Errors Found in 23.7% of DP-Generated SSI Checks

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unable to connect the files for these separate payment systems until early last summer.

The agency has also recently discovered several SSI clients have undisclosed bank accounts that can make them ineligible for supplemental income, he said.

This may be primarily a "training problem," he added, which can be solved by teaching agency caseworkers to ask the right questions during initial interviews to determine client eligibility.

Vanik pressed Cardwell about numerous studies of the SSA's computer operations conducted since 1971, focusing particularly on the recently completed but as yet unannounced GAO audit.

That report indicates SSA computer utilization is only 50%, the congressman said; a committee staff observer later stated Vanik was being generous.

Expects GAO Revision

Cardwell, who has stated the computer operation at SSA is in need of a complete overhaul to the tune of some $500 million, told the committee he takes issue with the GAO audit report – a "very quick analysis" disputed by other computer experts.

The GAO may be revising its estimate that the SSA uses only 40% of the capacity of its 17 large-scale computers, he said.

SSA needs new computer technology and facilities because in a few years the 34 million checks it now processes each month will reach 50 million, Cardwell stated.

The commissioner characterized the SSA's computer operation as "a patchwork" put together over the last 10 to 15 years under congressional mandates to meet the needs of increasing numbers of welfare programs.

While "it may be that we put some patches where they were not necessary," Cardwell said he feared the risks of "a breakdown of service" without the proposed expenditures for the computer operation.

With the new technology, which the agency estimates would be installed over a period of five years, SSA might "leapfrog" to a system that bypasses "both check writing and the post office," Cardwell said.

But while he contended "we're just passing too much paper around," Cardwell suggested welfare recipients are often wary of banks and so might react negatively to an electronic funds transfer system. He thought any such system should first be tested on federal employees.

Rapport Lack Slowing Progress

(Continued from Page 1)

ager should ask are "why the data is needed, what data is needed for what purposes, how quickly is it needed and why is it needed that quickly," Beatt said.

Flexibility must be allowed for workers in the field and automation can permit this flexibility, "but systems and social services people are often at odds over this," he claimed.

The systems man believes that he doesn't have to know the nuances of social services practice to design a system, Beatt said. "Perhaps he doesn't, but he must be responsive to those nuances," he added.

However, people in social services often "use the old saw that 'our profession is an art, and a system won't pick up the nuances of the art. We may actually just not want to face up to our own incompetence," he said.

One of the easier methods to obtain a systems person who is responsive to the needs of the field worker is to turn the field worker into a DPer, Beatt suggested. "It's much easier to teach social services people systems than the other way around," he said.

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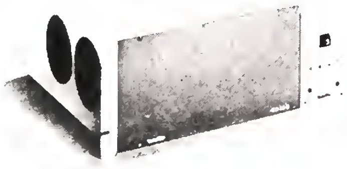

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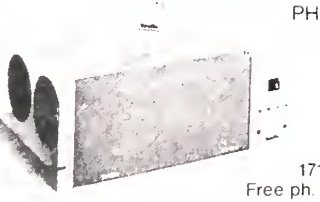

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Telephone Industry Legislation Threatens User Options: Wiley

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the telephone industry has yet to document any deterioration of the nationwide switched network."

In addition, Bell and the independent phone companies have not proven any adverse economic impact either, he said.

AT&T's increase in revenues for private line and terminal equipment services in 1975, compared with 1974, was more than double the total revenues of all competing suppliers of these services, he noted.

The specialized common carriers account for only .1% of their market, and the terminal equipment vendors have only .4% of their market area, Wiley said.

The combined revenues of both groups "do not exceed $170 million," while telephone industry revenues for the established carriers in this area are "over $4 billion," he said.

The specialized carriers have innovated in providing new services to users; it was a specialized carrier that provided the first switched digital data service, Wiley noted.

No Economic Losses

Despite claims from the telephone industry, "there is no basis for any intelligent conclusions as to potential economic harm" from competition, Wiley said.

Even if there were some impact, the phone industry seems to suggest "the only solution is to submerge or destroy the competitors."

This is an approach similar to contending that amputation is the only cure for a hangnail, Wiley told ICA attendees.

If economic harm should be proven, there are "numerous other alternatives," the FCC official suggested.

"First and foremost is the repricing and unbundling of telephone service rates to make them more competitive with independent suppliers.

"Second, the telephone companies might be authorized to impose access charges for terminals interconnected with the network.

"Third, specialized common carriers could be brought into the [intercarrier] separation arrangements.

"Fourth, usage-sensitive pricing could be adopted by state [regulatory] jurisdictions to allow users to pay only for the services they use and in relation to the costs they cause.

"And fifth, state jurisdictions could adopt a "lifeline service . . . which guarantees each citizen . . . an inexpensive phone," Wiley said.

AT&T Bills 'Serious, Persuasive'

WASHINGTON, D.C. -- The efforts by AT&T to introduce legislation which would overturn competition fostered by the Federal Communications Commission (FCC) are both "serious and persuasive," according to Walter Hinchman, chief of the FCC's Common Carrier Bureau.

There is "some immediate possibility" AT&T will be successful with its congressional legislative effort, but these chances decrease as time passes, Hinchman told the annual conference of the International Communications Association (ICA) held here last week.

As legislators become familiar with the facts relating to competition from the specialized carriers and the interconnection of non-carrier terminal equipment, they will no longer favor passage of the Bell Consumer Communications Reform Act, he implied.

Users should write to the FCC outlining the benefits they have experienced from competition since "that side of the issue never gets explored very well," he said.

"We believe the public has benefited and will benefit, both tangibly and intangibly, from the stimulus of competition," Hinchman said.

"I am not aware of any instance where competition has played a role in [recent phone company tariff] increases. Instead, these increases appear to have been justified on the basis of inflation, wage settlements, increased demand and all the other factors which normally enter into such requests," he said.

Appeals Court Stops Interconnection Plan

(Continued from Page 1)

it had been certified technically safe by engineering tests.

After being certified as providing protection equivalent to that in the DAA, the equipment would have been registered by the FCC for direct connection.

Two FCC decisions created the certification/registration program after AT&T's claim of technical harm to the network from interconnection was shown to be unfounded.

These decisions were handed down by the FCC in October and March; attempts by AT&T and other telephone industry companies to challenge them met with rejection by the commission.

Capitol regulatory experts consider the stay order somewhat unusual because it was not signed by more than one appeals court judge.

These sources indicated officials at both the FCC and the Justice Department are studying Widener's order, leading to the possibility further petitions against the stay order could result.

AT&T issued a statement which said it was pleased with the order delaying the FCC program because serious related problems still have to be considered and resolved.

Several suppliers of noncarrier modems and other equipment had already taken steps to modify their equipment in anticipation of the certification/registration program's May 1 starting date.

The Independent Data Communications Manufacturers Association (IDCMA) is reportedly studying the appeals court order and considering further action.

Correction

The Burroughs Corp. B80's MOS main memory has a 1 µsec cycle time, not a 1 µsec access time [CW, May 3].

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DP in Human Services

Question of Priorities Arises

Privacy Protection Seen Backfiring on Individuals

By Catherine Arnst
Of the CW Staff

CHICAGO – Should the most important concern of privacy legislation be the individual's right or the public good? This question was posed by two speakers at the Human Services Information Systems Conference held here last week.

Although the Privacy Act of 1974 was meant to protect civil rights, that protection can backfire on Welfare recipients, the speakers said.

Applying the provisions of the Privacy Act to public welfare can be a "double-edged sword," James Trainor, director of state systems management at the Department of Health, Education and Welfare (HEW) quoted a former HEW Secretary as saying.

The present HEW Secretary, David Mathews, once said: "there are good sound reasons for collecting many types of information. Without adequate records, older Americans would not receive their Social Security checks.

"But the potential for careless or mischievous use of private information is a fact of modern life that we ignore at peril to our liberties as a free people."

The public welfare system "depends on an exchange of data between agencies to do a good job. When we deal with clients requesting services, we ask them to lay their souls bare," Charles McDermott, comptroller of the Oklahoma Department of Institutions, Social and Rehabilitative Services, said.

The situation has improved, however, McDermott said. An example of a less subtle time was 14 years ago, when Congress employed "night riders" to obtain information on welfare households in Washington, D.C., by visiting them in the middle of the night, he said.

Welfare agencies must obtain an extensive amount of personal data on their clients and then store all this information, McDermott said. "There's enough data stored on an individual to ruin his life forever. But, that's not much different from what any large corporation does," he said.

The Privacy Act has forced state agencies exchanging information to develop methods of complying with both the act's regulations and those of HEW, McDermott said.

The Parent Locator Service, which states are required to have to qualify for certain federal funds, is one area where privacy requirements and HEW requirements have to be made compatible.

With the Parent Locator Service, exchange of information is permitted without the consent of the individual, but the Privacy Act prohibits exchanging the Social Security number (SSN). Without the SSN, it is very difficult to obtain the necessary data required by the service.

Some federal regulations have allowed agencies to get around this "Catch-22" by applying another: Individuals requesting benefits do not have to provide their SS numbers, but they can be refused those benefits if they don't.

The Social Security Administration (SSA) has gone to what may seem like extreme lengths in refusing to release the SS number, even when that release could benefit the individual, McDermott said. "SSA is not trying to be unreasonable; it only wants to avoid breaking the law," he said.

The Privacy Act affects data exchanged between agencies in different states and federal agencies, but the proposed H.R. 1984 would extend these regulations to both agencies within a state and private agencies.

In looking toward a future that could include H.R. 1984, McDermott suggested that public and private agencies develop an awareness of impending legislation in order to avoid problems.

Whether or not both the Privacy Act and H.R. 1984, if passed, will ultimately harm more than protect Welfare recipients is a determination that neither he nor HEW as a whole could make, Trainor said.

Climate Changed

"We're not monolithic at HEW; we don't have a corporate line," he said. The climate of the government has changed radically in the last few years, he added.

Under Nixon, the privacy of Welfare recipients was meaningless because the attitude was "that the bums should be off the rolls anyway," he said. After Watergate, the government and HEW switched to the other extreme and demanded protection of privacy above all else. "Now, we're changing again," Trainor said. The attitude of the new secretary of HEW is that "we must have accountability, but we must also guard against abuse," he said.

"There's nothing wrong with asking someone applying for aid what his income is," Trainor said. What is wrong to ask and whether accountability or privacy should be the first priority are questions Trainor could not answer. He doubted that anyone at HEW could answer them.

Child Support Law Causing DP Changes

By a CW Staff Writer

CHICAGO – The national child support legislation passed in January 1975 is causing an extensive revamping of many state welfare program systems, Jolie Bain Pillsbury, assistant to the deputy commissioner of the Texas Department of Public Welfare, said here recently.

This piece of legislation, which mandates the establishment of child support collection programs nationwide by January 1977, requires each state to set up a separate agency to deal with this program, she told the Human Services Information Systems Conference.

What the legislation means in terms of DP is the development of "an information system that can somehow mesh the time-bound requirements of legislation and information processing with the vagaries and erràtic inputs of a complex, unstable and uncontrolled set of variables related to the collection-of-payments environment," Pillsbury said.

The basic objectives of the child support program are to establish paternity, locate an absent parent, obtain child support payments and enforce the payment obligations of absent parents, she said.

Some of the federal requirements of the child support program are to uniquely identify the family and children; link children to an absent parent and to Aid for Dependent Children (AFDC) payments and food stamps received; account for and control collections and disbursements; and to determine bonus payments and then make those payments.

Texas has managed to develop a working child support system which meets the basic priorities, but the system was implemented so rapidly that many of the considerations required by the law for a child support program have not been met, Pillsbury said.

The Texas system currently maintains data about absent parents and the money collected from them, retains historical data on payments, sends payment due notices (which are often not followed up), generates reports and accesses AFDC files, she said.

What the system does not do is reach those families who are eligible for child support payments but are not in the AFDC program; it also does not interface with the food stamp program, she noted.

Texas' experience can be valuable to other states developing an automated child support system, but each state must design a system that will fit into its own administrative, legislative and judicial environment, Pillsbury said.

The law imposes uniform requirements on all states for the implementation of the child support program; the impact of these requirements, however, "varies greatly from state to state dependent upon the programmatic environment of each state," she said.

The variables affecting the system design are primarily the structure and location of the child support agency in a state; the structure of the agency dealing with AFDC payments; the type of information systems already in existence which support other human services programs; the state's prior experience with child support collection; the laws and court cases relating to child support; and the attitude of the public, courts and legislature toward child support, she explained.

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WANG

Two States Find Planning Crucial to System Success

By Catherine Arnst
Of the CW Staff

CHICAGO – The key to a successful social services DP system is thorough planning with the interaction of employees in the design stages, speakers from Utah and Oklahoma told the Human Services Information Systems Conference here last week.

When Utah decided to revamp its social services system, it tried to determine what other states were doing and then adapted the best, according to Evan Jones Jr., director of the Utah's State Division of Family Services.

The state decided to transfer Maine's system to its own operation and developed the capability of generating both the required federal reports and output reports similar to Maine's.

But "we wanted to focus on results," Evans said. "We wanted to utilize the computer as more than a high-speed printing press."

To achieve that goal, the state added a few refinements to the system it borrowed from Maine.

One of those more important was a master service unit, which Evans defined as a half-hour of an employee's time spent on each case. All cases are defined in terms of this master service unit so that the amount of time spent in client contact as opposed to administrative chores can be tracked.

A number was also assigned to each worker in order to monitor his workload, Evans said.

"Our goal was for workers to spend two-thirds of their time in direct contact with clients," he said. To achieve this, Utah had to keep paperwork to a minimum and "definitions had to be kept as simple as possible."

'Is It Necessary?'

The main criteria established for each data element was the question, "is it necessary?" Evans said. Utah wanted a one-page form of client information for input into the system; it ended up with two pages.

With those two pages, the state was able, with the aid of a management systems firm, to develop a system that can keep an inventory of all the social services programs available; maintain a history of the services used and the payments made to each client, both individually and as part of a family unit; and track the number of master service units expended on each case and what type of service those master units represent.

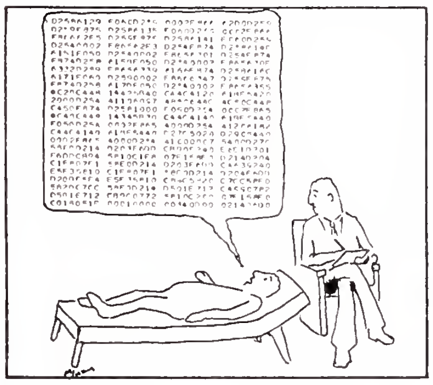
Unfortunately, the state's chosen starting date for its system was about six months too soon, Evans said, and the operation had to be run by hand until all the bugs were worked out.

Some of those bugs included program and support elements that weren't ready, and a lack of consideration of the impact the end of fiscal year, which was the same as the system's proposed starting date, would have on the computer facility.

Evans had several words of advice to other states planning on streamlining their systems; the most important one was "to be sure and involve the staff using the system."

In addition, the user should "determine what type of finished system you want and set standards that you want that system to meet," he said.

"Define your data elements in writing and keep your staff informed of where you are going, because it might take two years longer than you expected to get the system up," he warned.



DP in Human Services

Involvement of the staff in Oklahoma was an important element in the success of the social services system in that state also, according to Philip J. Smith, head of the Management Information Division of the Oklahoma Department of Institutions.

"Our system was developed by the push and initiative of our staff," Smith said. While developing its system, Oklahoma had meetings every month with all levels of DP employees, he noted.

His state's two main considerations in developing the system were the benefits to the client and the simplicity of reporting data, Smith said. Its solution was teleprocessing.

Oklahoma now has IBM 3270 terminals installed in all 77 of its county offices. "Our accuracy has improved and the status of all services can be determined readily," Smith said.

Privacy is maintained through the location of the terminals and various levels of sign-on codes, he added.

The state uses a hierarchical structure for its data, and access is through a combination of index sequential and direct-access methods, he said.

The software is based on a module system, he explained; whenever a data segment has information added or deleted, only that one segment is affected.

An especially useful feature of Oklahoma's system is Alpha X, an alphabetical cross-reference, Smith said. With this feature, a record on every client for every service in every department can be accessed.

Smith believes the reason for the system's success is that "the social services system in Oklahoma is not considered a property of the DP department but of the Social Services Department," and an employee of the Social Services Department was devoted to the planning and design of that system.

Both Evans and Smith agreed a system must be responsive to users' demands.

"Keep in mind that a systems is a means, not an end, and revise as you go along," Evans advised.

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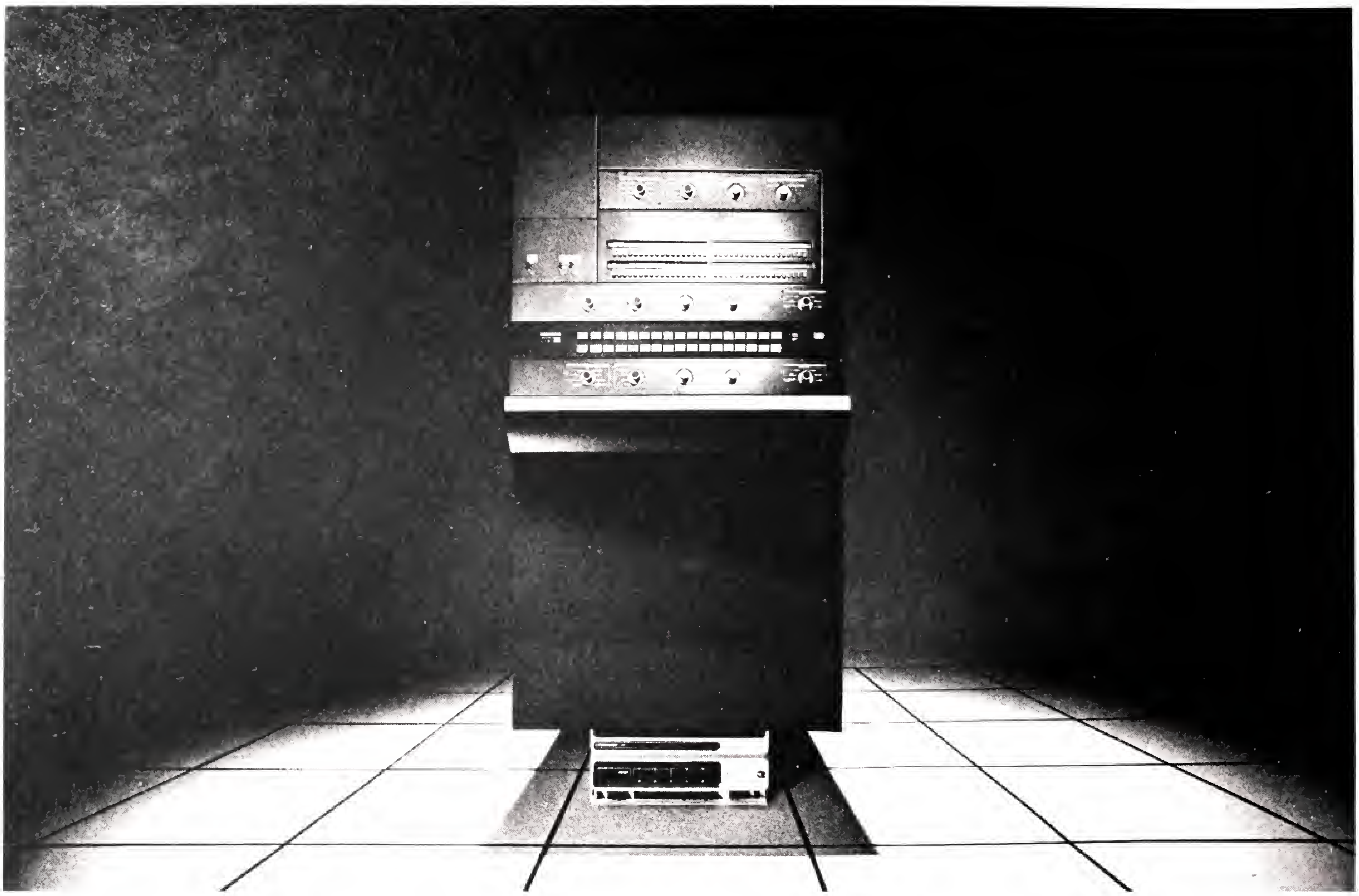

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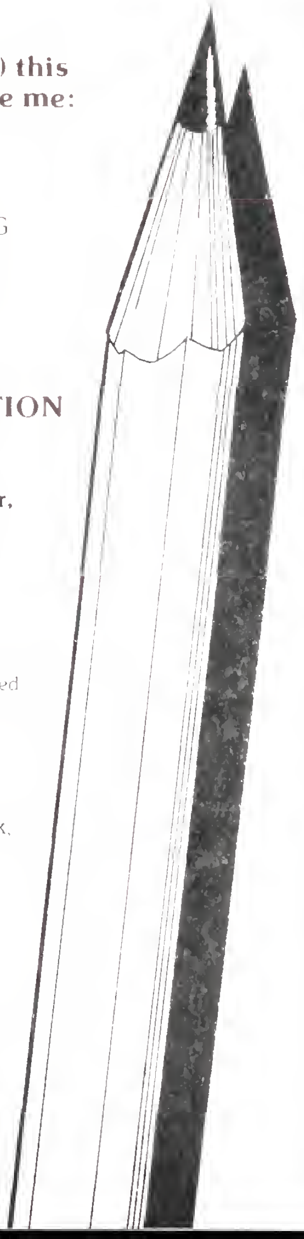

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Would Rate Job Seekers' 'Suitability'

UK Job-Matching Plan Attacked on Privacy Grounds

By Joe Hanlon

Special to Computerworld

LONDON – A computerized job-matching scheme which would rate job seekers according to their "suitability" for employment has drawn considerable protest here.

The pilot project, slated to begin this summer, "is in danger of running contrary to the principles laid down in the white paper on 'Computers and Privacy' [CW, Dec. 31-Jan. 5]," according to Gerry Fisher, deputy president of the British Computer Society.

And the Civil and Public Services Association has said its members, who work in employment offices, will refuse to do the ratings.

Under the proposed system, job seekers would be rated A, B, C or D. While employment officers have always done informal ratings, this is the first time the ratings would be formalized and passed on to other people.

The pilot project will use a Honeywell 66/20 to do on-line real-time job matching at 14 East London employment offices which annually place almost 30,000 people in jobs.

If successful, the matching project will be expanded to all of London.

Initially Similar

For the job seeker, the procedure will initially seem little different than it is now. As at present, the employment officer will take down details about the applicant.

Instead of searching through a file box of slips of paper for jobs, however, the officer will input the data via CRT and immediately get a list of any appropriate jobs. The job seeker can then go for interviews.

The radical change in procedure will come when there are no appropriate jobs immediately available. At present, if an employer telephones an employment office with a job, the opening is circulated to employment officers, who decide which of their clients to send for an interview.

With the new system, the computer will print out a list of all appropriate people, listed in order first by nearness to the job and then by "suitability". The decision on who to send for interviews will be made by an officer at the employment office nearest the job.

The officer will be making choices about people he has never met, based only on data from the computer. And the officer can pass over nearby people with low suitability ratings to choose people farther away with higher suitability ratings.

The suitability rating will be based on job stability, employment record and "realism." But the Employment Services Agency, which will run the system, refused to say if a person could see and challenge the rating, although the white paper said this should always be done.

Suitability will be listed on the CRT screen as "JOB CAT," so it is not clear how many people will even know what it is.

Data from employment offices is available to social security and welfare officers under many circumstances, and observers believe it likely that "suitability" ratings will find their way into many welfare files. Employers will probably be permitted to ask for certain suitability ratings, and thus they too will find out this information.

The Manpower Services Commission, which runs the Employment Services Agency, announced last month it had approved the use of suitability ratings. The commission attached particular importance to the review procedure, which would obviate any possibility of the so-called "tag-for-life."

This review procedure will require that people who do not get jobs within a fixed period be interviewed by a different employment officer who can revise the computer entry.

But the British Computer Society is still unhappy. The scheme "might eventually invalidate the claims made in the white paper as to the strict controls exercised in the public sector on personal data. Coming as it does at the height of the privacy debate, it could possibly seem a rather rash proposal," Fisher commented.

According to Fisher, one of the biggest objections is that the Manpower Services Commission made the decision in secret despite the white paper's argument that such choices should be made publicly.

The Manpower Services Commission "knew the white paper had been published, yet it chose to make its decision privately, leaving it to be dug out by journalists. Even if it is a perfectly good scheme, by failing to discuss it publicly it is asking for every bit of trouble it is going to get," Fisher said.

DPMA Polls Members On Educational Needs

PARK RIDGE, Ill. – The Data Processing Management Association's (DPMA) Education Foundation is currently surveying the society's members to determine their educational needs and desires.

The survey, mailed to all 23,000 DPMA members in February, is considered the largest and most comphrehensive of its type the society has conducted.

The Education Foundation was established "to provide leadership in identifying educational opportunities that will advance the information systems profession," DPMA said.

Its immediate objective is the dissemination of information among technical societies and the information systems community. The survey is the first step in the foundation's efforts, the association added, noting the results of the survey will be published in *Data Management*.

In the future, the Education Foundation plans to seek grants to conduct special studies, the results of which will be published as monographs, magazine articles or special reports, DPMA said.

How to train your programmers in COBOL for $15 per student

Last year we began selling two assembler language texts for inhouse training (one book for DOS, one for OS). Although we knew we had good products when we started, the results have been overwhelming.

Thousands of companies have tried our assembler language texts. Dozens of companies have reordered for their training programs. And many managers were so pleased that they took the time to write. Some examples:

"The manuals we purchased from you are the finest we have ever used. They have allowed our programmers (and not a few analysts, too) to write programs better and faster than I would have ever believed possible."

"Your manuals have saved me around $1200 as I was going to send one of my programmers to IBM school in Los Angeles, but thanks to your manuals he won't need to go to the school."

Now, we are happy to announce a COBOL book that is as effective as our assembler language texts. In fact, both the assembler language texts and the COBOL text were developed by the same people.

4 Reasons Why These Books Are Effective

1. They were written under the technical supervision of Kevin McQuillen, the author of our assembler language texts. Kevin is currently a consultant with Cincom Systems in San Francisco, and he has been a DP manager and manufacturer's rep. So our COBOL book is loaded with practical advice.

2. The content was selected based on an analysis of the tasks normally done by a COBOL programmer in industry. That's why these books contain everything of use to the average programmer and very little that isn't. Because the books emphasize DOS and OS considerations, they are ideal for System/360-370 users. But they can also be used on other systems since the book is based on 1968 and 1974 ANSI specifications. The only major content omissions are sort, segmentation, and report writer.

3. The books are organized in the most effective way possible for a programming course. Quite simply, a complete subset of COBOL is presented in the first two chapters of the book. After this, all material is organized by function (debugging, table handling, subprogram linkage, etc.). As a result, the student always sees the relationships of the parts.

4. Each book contains dozens of complete program listings. They start with card-to-printer programs and end with programs that create and retrieve indexed and relative files. In between there are listings that show how to use EXAMINE and INSPECT for free-form input, how to use SET and SEARCH for table handling, how to link subprograms, and much more. In our experience, these listings more than any other factor determine whether or not a course is effective. And they are the missing ingredient in most training courses.

How You Can Use These Books

If you don't have an inhouse training program, you can use our books as training courses in themselves. Just hand them to your programmers. Quite frankly, we believe our books will outperform any competing course you can send your programmers to . . . at a fraction of the cost.

On the other hand, if you have an inhouse COBOL course, the quickest way to improve it is to give our books to all students. Because our books contain dozens of listings that illustrate professional practices, they will quickly improve coding techniques. Because they provide detailed procedures for debugging, they will quickly improve debugging efficiency. And because our books have a unique modular organization, they can easily be adapted to your present course sequence.

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So there is no risk to you, all our books are sold with an ironclad guarantee. First, you can have 30 days to review them. Second, if they aren't effective in your training programs, you can return them for a full refund . . . no matter how long you've had them

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Individuals: Please send $15.50 for each book ordered (plus 90 cents sales tax in California). In this case, our unlimited guarantee still applies. Return the books and you will receive a prompt refund

GCCA Sets D.C. Conference Next Week

Societies/ User Groups

WASHINGTON, D.C. – The spring conference of the Graphic Communications Computer Association (GCCA) at the Shoreham Americana Hotel here May 19-21 will offer a theme with a twist on the bicentennial slogan.

"1966-1976: 200 Years of Progress" will focus on management, technology utilization and capital investment criteria of graphic communication.

Attendees will include newspaper, magazine and book publishers, software specialists and commercial printers and typesetters, the GCCA said.

Concurrent sessions at the conference will include an editorial, composition and prepress program; a production automation and distribution program; and a management planning and control program.

A vendor exhibit will also be part of the conference.

Further information is available from Norman W. Scharpf, GCCA executive director, at 1730 N. Lynn St., Arlington, Virginia 22209.

NCC Plans Services for Deaf

NEW YORK – Interpreting services will be provided for deaf DPers attending the 1976 National Computer Conference (NCC) here June 7-10.

Sign language interpreters were used with success at the 1974 and 1975 Association for Computing Machinery (ACM) conferences to help deaf DP personnel who have difficulty finding educational opportunities structured for them, according to Steve Jamison, vice-chairman of the ACM Special Interest Group for the Physically Handicapped.

At NCC, a special session on "Computers and Sign Language" will feature speakers from several colleges which have programs for deaf students.

Interpreters will be provided at the technical sessions at no charge, Jamison said.

Further information is available from Jamison at 1530 Page Mill Rd., Palo Alto, Calif. 94304.

ACM Has Guide to DP in Colleges

NEW YORK The Association for Computing Machinery (ACM) has published the *Administrative Directory of College and University Computer Sciences.*

The 100-page booklet contains a listing of the names and addresses of approximately 300 heads of computer science departments and 900 directors of computer centers at universities and colleges in the U.S.

It also includes information on the degree programs offered and on-site computing equipment.

The directory costs $5 per copy for ACM members and persons listed in the directory and $7.50 for others. Copies can be ordered from the ACM Order Department, P.O. Box 12105, Church St. Station, New York, N.Y. 10249.

Call for Papers

THIRD ANNUAL COMPUTER GRAPHICS CONFERENCE AND EQUIPMENT DISPLAY, Nov. 3-4, Detroit.

The Engineering Society of Detroit is seeking papers on computer graphics technology aimed at managerial, engineering and architectural personnel in both large and small firms.

A brief abstract must be submitted by June 1 to Evelyn Simon, conference manager, Engineering Society of Detroit, 100 Farnsworth, Detroit, Mich. 48202.

SIXTH ANNUAL CONFERENCE OF THE ASSOCIATION OF COMPUTER PROGRAMMERS AND ANALYSTS (Acpa), Nov. 10-12, Washington, D.C.

Papers related to the conference's theme, "Pathways to the Future," are requested.

Subject areas include career development, on-line interactive search systems, software structures for data base management, packet-switched networks, software auditing, internal controls and security, women in DP, teleprocessing using satellites, networked minicomputers, microprocessors/microcomputers and unionism in DP.

Papers must include an abstract not exceeding 150 words and the total paper should not exceed six typewritten pages, excluding illustrations. Papers should be sent by June 1 to David R. Skeen, Acpa-6 program chairman, at the Office of Naval Research, Room 232, 800 N. Quincy St., Arlington, Va. 22217.

COMPUTER NETWORKS: TRENDS AND APPLICATIONS, Nov. 17, Gaithersburg, Md.

The IEEE Computer Society is seeking tutorial papers describing practical results with computer networks and networking systems or presenting new research results.

Suggested topics include multicomputer, value-added or terminal-oriented networks; network design or access techniques; economics, management, or measurement of networks; applications and future directions for networking.

Three copies of a 1000-word abstract must be submitted by June 15 to Dr. Patrick McGregor, Network Analysis Corp., 9105 Westerholm Way, Vienna, Va. 22180.

INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING (Ifip) CONGRESS 77, Aug. 8-12, 1977, Toronto.

Papers can be in the areas of theoretical foundations of information processing, computer hardware, software, networks, applications in science and engineering, computer-aided design, applications in management and administration and information processing and education.

Four copies of the completed paper should be sent by Nov. 15 to the Program Committee for Ifip Congress 77, Ifip Foundation, Paulus, Potterstraat 40, Amsterdam 1007, Netherlands.

Group Sponsoring DP Course for High School Dropouts

By Catherine Arnst
Of the CW Staff

PHOENIX – High school dropouts here are being given the chance to get into DP through a training program sponsored by the Phoenix Chapter of the Association for Systems Management (ASM).

The program, Project Clas (Computer Learning Aid in Systems), was started by Ralph Compton, president of the Phoenix ASM chapter, to aid young people who are currently "not at all competitive in the job market."

Project Clas will enable its students to start in an entry-level programming position when they are through with the training, he said.

Project Clas is a three-to-four-month self-instructional course which gives students "hands-on" experience in a DP environment. Honeywell donated 10 self-instructional units (the same as those used by the firm to educate its customers) to the program.

There are currently five students in the program. Three of the original students have dropped out since the program began, but they were replaced by others.

Societies/ User Groups

The students are taught an introduction to DP, programming, flowcharting, Basic Cobol, file design and disk concepts, Compton said. They work at their own pace and when they run into a problem, an ASM member can be called to help them out, he added.

Screening Test Given

There were 400 to 500 calls received by people interested in taking the course when it was first announced. A screening exam is given to choose those students most capable of handling the material, Compton said. The students in Project Clas must be enrolled in a high school equivalency diploma course also.

No jobs have been promised by area companies for the graduates; "most have a 'wait-and-see' attitude," but they have expressed interest, Compton said.

"I think the number of entry-level positions that are available to these students are really opening up," he said. "Many shops are finding they need a backup programmer to do the simpler tasks."

The program will probably be expanded in the fall to include a night course, Compton said. Currently such an option is unnecessary since most of those applying to the program are unemployed.

The program is operating without any federal, state or local funds, depending on area businesses to provide support. "This allows us more flexibility," Compton said.

"We've showed these students that we are interested; what they are willing to do afterwards is up to them," he concluded.

Right now, you could be on the edge of destruction.

You're looking at a byte's-eye view of the major cause of early tape retirement: edge damage. It can happen to any tape, but it's most critical on tape used with 9-track heads, where the outer tracks are a scant 9-thousandths of an inch from the edge of the tape.

It happens because of continual high-speed starts and stops. Because of constant mechanical contact. Because of interference with tape path components. And because human operators can do some pretty inhuman things to tape.

You probably can't see the damage happening. But you can sure see the costly results—dynamic skew, erratic output, data loss and job failures.

So we developed a new tape—Cubic—so named because side-load strength increases by the cube of the tape thickness.

Memorex Cubic has a base film 25% thicker than conventional tapes. As a result, it offers TWICE the resistance to edge damage and lateral movement. It also offers improvements in auto loading reliability and time displacement errors.

See your Memorex representative, write us at 1200 Memorex Drive, MS-0064, Santa Clara, CA 95052, or phone 408-987-2520.

Memorex Cubic Tape—it gives you the edge.

MEMOREX
See us at Computer Caravan.

Calendar

May 16-18, Andover, Mass. – **Facsimile – A New Perspective**, sponsored by the Institute for Graphic Communication (IGC). Contact: Richard D. Murray, Director of Conferences, IGC, 375 Commonwealth Ave., Boston, Mass. 02115.

May 18-20, Andover, Mass. – **Business Opportunities in Satellite Communications**, sponsored by IGC. Contact: Richard D. Murray, Director of Conferences, IGC, 375 Commonwealth Ave., Boston, Mass. 02115.

May 24-25, New York – **A National Conference on the Right of Privacy: The Issues and Problems**, sponsored by the National Retail Merchants Association (NRMA). Contact: Privacy Conference, NRMA, 100 W. 31st St., New York, N.Y. 10001.

May 24-26, Pittsburgh, Pa. – **Hybrid Microelectronics**, sponsored by the University of Pittsburgh and IEEE. Contact: Minor C. Hawk, Assistant Dean, 231 Benedum Engineering Hall, School of Engineering, University of Pittsburgh, Pittsburgh, Pa. 15261.

May 24-26, Amsterdam – **Retailing, Banking and Plastic Money**, sponsored by the Ifip Applied Information Processing Group (IAG). Contact: IAG Headquarters, 40 Paulus Potterstraat, Amsterdam-1007, Netherlands.

May 25-28, Logan, Utah – **Sixth International Symposium on Multiple-Valued Logic**, sponsored by Utah State University, IEEE Computer Society and Office of Naval Research. Contact: Prof. Stephen Su, Electrical Engineering Department, Utah State University, Logan, Utah 84322.

May 27, Gaithersburg, Md. – **Trends and Applications 1976: Micro and Mini Systems**, sponsored by IEEE Computer Society and National Bureau of Standards. Contact: Trends and Applications 1976, P.O. Box 125, Columbia, Md. 21045.

Editorials

Privacy Law Extensions

Special interests in both the private sector and in the area of state and local governments are now pushing to avoid coming under the same type of legislation that regulates the Federal government's handling of information about individuals.

At the Computer Law Association meeting recently, spokesmen for each of these groups were active [CW, May 3].

Most of these spokesman emphasized how important information is to their constituencies and contended that businesses or state and local governments could not possibly do their jobs without unlimited access to information.

It is true that information is an important commodity in this day and age and that information is important for the functioning of many businesses and for local governments.

Privacy legislation will not change this.

Privacy legislation, however, will protect the rights of individuals in relation to these information systems, and these individual rights must come before the rights of business or state and local governments to collect information.

Personal information that is of legitimate interest and is truly needed by an organization could still be collected under even the most stringent laws.

The individual would be protected, however, since he would be informed of the use to which that information would be put and would be protected from other uses of the same information.

The enactment of privacy laws covering local governments and the private sector will force those areas to rethink the way they collect information and use it.

In some cases such a reappraisal will be traumatic.

Many organizations will clearly have to stop collecting some information they now collect as routine, and all will have to provide better safeguards on access to personal data than is normal today.

In many ways this can be good for the organization that takes a positive approach to the problem.

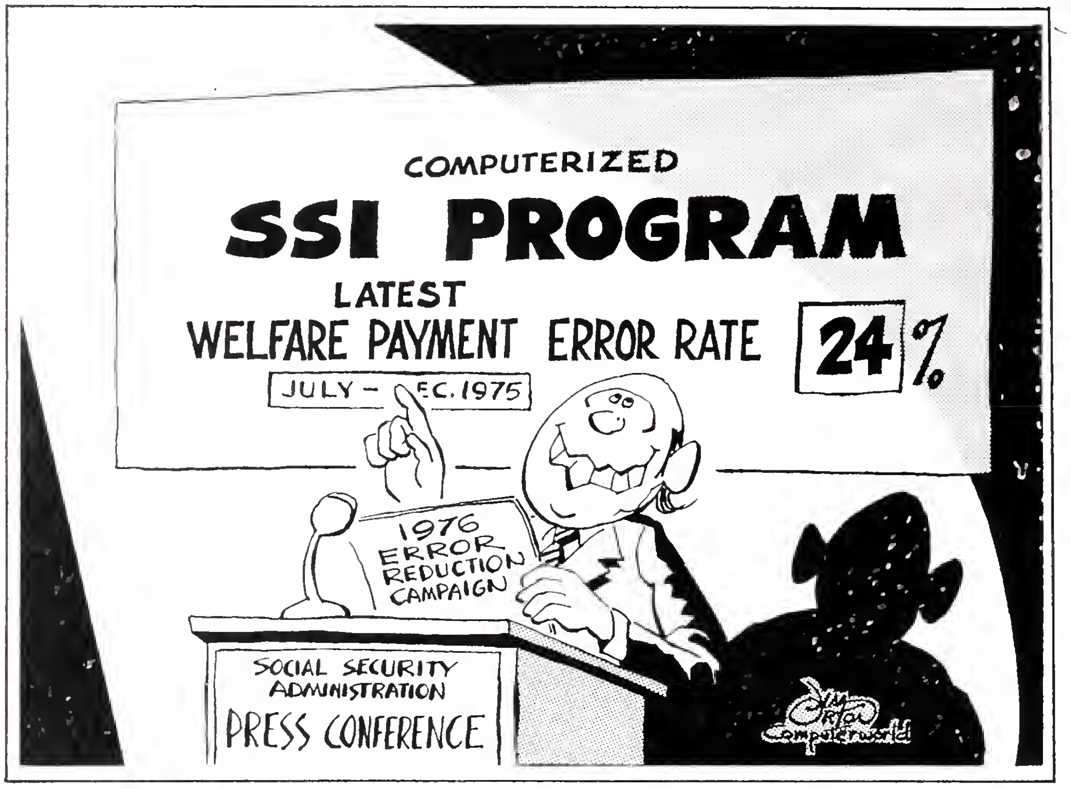
Often information systems have grown with little real planning and thought. The coming passage of privacy legislation gives a firm the opportunity to take a hard look at the data it is now collecting on individuals and to decide how much of it is really necessary and how much is being collected just "because it's always been done that way."

All data processing departments could spend their time constructively in planning how to meet privacy regulations and not in bemoaning the fact that such legislation is likely.

The mood of the country is for increased personal protection vis a vis large institutions, which are often represented by information systems which crave more and more individual information.

Privacy legislation is likely for the private sector in the not-too-distant future.

Operations that plan for it and meet the challenge of privacy positively will succeed and do well in the new environment. Those who resent the coming legislation and look upon it as a burden rather than an opportunity will not do well – and they receive their just desserts.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LATEST
WELFARE PAYMENT ERROR RATE 24%
JULY – DEC. 1975
1976 ERROR REDUCTION CAMPAIGN
SOCIAL SECURITY ADMINISTRATION
PRESS CONFERENCE
computerworld

'To Err Is Human, to Forgive, Divine;
So You Forgive Yours, And I'll Define Away Mine!'

Letters to the Editor

Marketplace, Not a Committee, Should Decide Merits of EFT

A recent editorial [CW, April 26] stated that there is a policy vacuum at the federal level with respect to the development of electronic funds transfer (EFT) systems.

A fear was expressed that many systems "may be a fait accompli when policy is finally made."

To avoid such a possibility, the recommendation was that "a moratorium on the initiation of new systems is the only way to slow the explosive growth of local experiments in EFT."

We do not see local experimentation in EFT as a threat to the public interest. The mechanism of the marketplace, selecting among competing alternatives, will determine the EFT system (or systems) best meeting its needs. The unsuccessful EFT experiments will be eliminated; the successful ones will grow in influence and be adopted by financial institutions. In other words, we should allow free market influences to prevail.

No group of people deliberating on EFT in Washington, however talented, can approach the collective wisdom of this market. The only legitimate role for Washington is to assure that no bank, group of banks or other entity is able to use EFT to obtain (or maintain) a monopolistic position.

Further, no institution, particularly the government itself, should use EFT to violate the rights of personal privacy. Except for those considerations, the form of the future EFT system should be determined by the market without constraints applied by a federal bureaucracy.

Nicholas G. Hesse
EFT Systems Planning Department
Maryland National Bank
Baltimore, Md.

Two Classes of Personal Data

I wish to dispute a claim made by Herb Grosch [CW, "Who Owns the Data?," April 26]: "In the end, data about a person will inseverably belong to that person."

Crucial to any determination of valid property rights in any entity is the question of how that entity is acquired. In the case of property rights to data about people, I believe this consideration should inevitably lead to (at least) two classifications of data about people and thus to two different sets of rules defining the property rights.

A simple example should make the distinction clear: Suppose I go to a bank and fill out an application for a loan. I provide certain information about myself – my address, marital status, annual income, assets, etc. – to the bank for the sole purpose of being granted a loan.

I would not otherwise provide this information to the bank, and I have not given it gratuitously. I retain the property rights to this information.

The bank should use it only for the purpose of deciding whether to grant me the loan I request.

Now suppose I default on the loan, once granted. This is information about me, but I didn't provide it to the bank.

The bank experienced it, or earned it, at perhaps considerable cost to the bank. This information, that I defaulted on a loan of such and such a value, is rightfully the property of the bank. The bank should be able to dispose of the information as it sees fit.

I certainly hope our legislative and/or judicial systems make these distinctions when they get around to establishing and enforcing the property rights to personal data.

John Kannarr
Glendale, Ariz.

Data Past

Five Years Ago
May 12, 1971

SEEKONK, Mass. – The principles of shared software, distributed data processing, cable television and computer-assisted instruction will combine to form the "wired city" by 1975, according to speakers at a meeting of the Association for Systems Management.

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WHITE PLAINS, N.Y. – IBM announced an upgrade to the 2260 CRT terminal system with the 3270 alphanumeric CRT, which featured an improved hard-copy printer and 1,920-character display, IBM said.

Eight Years Ago
May 8, 1968

CAMBRIDGE, Mass. – The new technology must help solve social problems, Charles C. Wilson, chairman of Xerox Corp., told Harvard business scholars at a series of lectures sponsored by the Diebold Institute. "The resources exist to solve the problems of poverty, urban blight and perhaps even racial strife. If the problems are not solved," he warned, "I have the uneasy feeling that the role of private enterprise may be downgraded and replaced by something else."

– – –

WASHINGTON, D.C. – Maintenance of computer equipment by the Federal government was costing $50 million each year, according to a General Accounting Office report. More emphasis should be placed on in-house maintenance to cut these costs, the report said.

Can Any Good Thing...

". . . come out of Nazareth?" said Biblical doubters. And in our own parched land, with only a few scattered olive orchards of honesty, the same cynical viewpoint prevails. Can anything done in Washington really be well-intended? Or are there Metternichean overtones to everything?

I must say the CW lead story on John Eger, the Office of Telecommunications Policy, and EFTS [April 19] gave me fresh hope. I don't know Eger personally, and references to him by the Washington liaison office of AFIPS have been fairly neutral. But his reported concern about Federal incursions into the privacy of the citizenry, via Federal Reserve Board centralization of electronic funds transfer subsystems, gave every indication of genuineness. To see such concern in the White House is heartening.

Probably the basic thrust of the Board, and similar bank-oriented agencies elsewhere in the federal establishment and out in state government, is the old American syndrome: if we can, we should! It took us to the moon. But it dams beautiful, wild rivers and pushes us into God-forsaken adventures like Viet Nam. It builds Amdahl's goody box – but also brings variant software from every ambitious compiler designer.

But I digress: what I meant to write was, the fact that it would be *easy* for the Fed to play such games is no justification whatsoever for doing so. We should say, "Think first whether you want such a dangerous weapon, not how much it costs to acquire."

Wouldn't you think, in the reawakened memories of Watergate, even the least sensitive bureaucrat would hesitate? Yet there goes the Fed, plunging into unnecessary controversy, asking for future trouble: amazing!

An especially interesting speculation for me is the possible inhibiting effect of Federal Reserve Board ambitions on the obvious intention of bank holding corporations to gather up the EFT and future broader money/credit/service network responsibiilty. There are independent credit nets already, both the plastic money giants and the credit verification people. There are hungry nonfinancial data networks (GE, CDC and CSC, for instance). There are retail chains like Federated. None of these are governed or threatened by the Board, and while the banks and the Fed fight it out for dominance, with the latter holding a powerful whip over the former, the ITTs and the DATRANs will forge ahead. I'm not clear that they shouldn't, you understand!

Eger doesn't want to question the basic EFT idea, I gather, nor will the newly manned EFT Commission. He wants to keep federal agencies, and especially FRB-like agencies, out of the central picture. I would go much further, and have the commission begin by considering the broad social desirability of EFT itself: the civil liberties issue, the automation/unemployment issue, the freedom-to-play-games-with-the-"float" issue, and so on. Meanwhile their technical hirelings can be costing up the various proffered alternatives, and perhaps a few of their own.

Also, very different kinds of consultants (the social science and public relations sorts) should be canvassing and extrapolating public resistance. The grocery code fiasco gives us clear warning! I doubt very much if average bank customers, let alone the marginal poor folk who will be drawn in when their social security and welfare checks are transmitted via computer, care one iota for the profits or the operating difficulties of Citibank or the B. of A.

What they fear is impersonality, difficulty in asking questions and correcting errors, further dehumanization. What *I* fear is an electronically and sociologically broad band channel from the nation's financial transactions to the IRS and the cops and the FBI and the Secret Service. Easy, cheap – and *very* quiet!

Remember how slow Ford has been to appoint the Commission? Remember how narrow the commissioners' backgrounds have been? That means the advisers who arrange priorities and write presidential statements and recruit appointees are either corrupt – that is, want the EFTS to go ahead before the general public sees its danger – or stupid – don't realize the public weal is even involved. In Kennedy/Johnson days, I would be sure, corrupt. With Jerry Ford and his horrid precursor, "stupid" is certainly possible.

That is why the Eger initiative is so important. If indeed the White House has shunted EFT matters aside through ignorance, even an appointee thereabouts who favors private EFTS excessively is better than disinterest.

Everyone at CW, and a fair gaggle of professionals in AFIPS and its member socities, is watching this scene closely. The enormous competition shaping up between banks and credit outfits and retail chains and computer service companies gives those of us who care about human beings cracks in which to insert our pry bars, and leverage with which to exert our otherwise puny influence. There is still time before we have to man the barricades!

Herb Grosch

Comma-Control Method Bars Name-Suffix Blunders

When candidate Gerald R. Ford sent out his campaign letters *("I am writing to you today to personally ask . . .")*, one went to "R.F. Morrison CDP." Morrison was then saluted (on three occasions in the letter) as "Mr. CDP." Similarly, the American Express senior vice-president of marketing wrote to "Mr. R.F. CDP, County Monroe." All of which made R. Frank Morrison, CDP, think about the need for handling suffixed names, including the generational ones, such as Jr., etc.

The Taylor Report

By

Alan Taylor, CDP

He came up with a good, seven-step approach, based upon the use of the commas. This is reproduced in the box. Morrison puts the last name first with a comma after it and then bans the further use of commas in the name fields unless some suffix appears.

Comma-Control Virtue

The comma-controlled approach is a good one which really says that the salutation part of the name must be distinguished in some specific way so that it is correctly used. That part is simple. What I particularly noted, however, were the last two steps.

I have already talked about banning the use of commas as field separation characters. This is the essential basis of the scheme. Without this comma ban there is little in the system. With it, however, a valuable blend of the human and the logically acceptable has occurred. Commas are humanly acceptable in name fields, but they are not absolutely required by humans. Commas are therefore available without problem to handle logical requirements the computer listing has imposed.

This use of unobtrusive, acceptable characters for giving unobtrusive, acceptable control is superior in design to efforts that require the use of special logical characters. Such characters, if printed, will stand out and shriek.

Migration Path

Morrison's sixth step tells how the user gets from other types of lists to a comma-controlled list. The inevitable problem facing all designers of migration paths is "How do you get there from here?" Many otherwise very good approaches have been lost when problems arose in getting to some desired starting place.

In itself, the rule is quite reasonable. It points out that some eyeballing will have to be done, and gives some rules about when it will be necessary, which are items that can be easily programmed.

It provides for estimating how much work will be involved in setting up new lists in the method. It is a good and a necessary clause.

But these two rules are not like the first five. They are no more like those than a suffix such as CDP is like the salutation name Morrison! And, like suffixes, they need special treatment in the write-up because they are often put in the wrong place.

The rules that govern the limitations in use of a system (no commas other than system ones) and the migration effort (eyeball on special conditions) are key elements which should be separated for easy reading. They are properly associated with the statement of the systems use and virtues.

1. Name fields are free-format, last name first, as is a common current method of storage.
2. A single comma is required following the last name and preceding the first name. Spacing on either side of these commas should be regulated, and normally standards would call for no spacing on either side of it.
3. If a name suffix exists, a second comma separates the name suffix from the rest of the name in the same manner as the separation between the last and first names. Example: Morrison, R. Frank, CDP.
4. The string-handling transposition always assumes that the entire string up to the required first comma is the last name. What follows is assumed to be the first and second names until either the second comma or the end of the field is reached. The second comma indicates that the balance of the field, if any, should follow the last name when being prepared for full-name printing.
5. Input editing should check that there is at least one and not more than two commas. The commas cannot occur in the first position, nor should any numbers or special characters, other than hyphens, follow.
6. List translations from another format should be eyeballed if they contain more than two nontrailing blanks or any special characters other than periods.
7. Free-form name and address input may not use the comma as a field separation character.

The description above shows a different approach to handling name suffixes such as Jr., III, Ph.D., etc.

Limits and migration requirements are items which are often buried at the bottom of lists. I think that in writing up new ideas it is better practice to include them in a lead-off summary rather than listing them as though they were another automatic path of a routine.

The advantages and the costs would have been much clearer if Morrison had started out with a statement such as

"The controlled use of commas as separators in name fields can prevent confusion between last names and suffixes such as CDP. Files currently existing with uncontrolled comma use can be converted, although eyeballing on a name-by-name basis will be required in some specific cases."

Try bringing up these limitations at the top of your technical papers. It really does help to bring them into focus.

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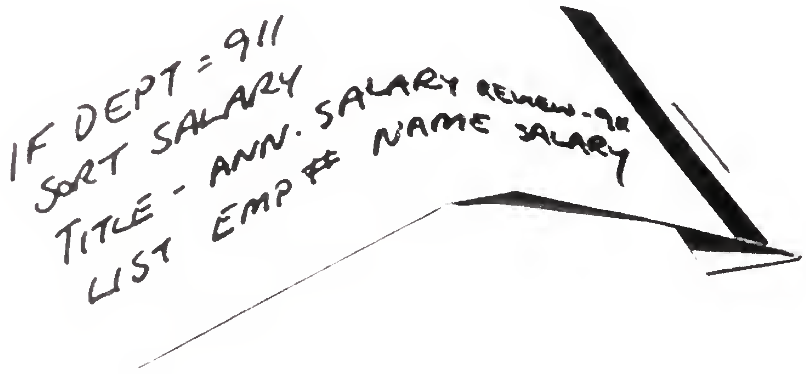

An Easytrieve Coding Form

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Letters to the Editor

Series 1000 Rate Increase Chilling Reminder to Users

The March 29 article on AT&T's Series 1000 rate increase was a chilling reminder that users should maintain their network system approaches at or near prevailing commercial practice.

Failure to perform timely upgrades can leave a system in a very vulnerable minority class.

The rate increase, however, was not a result of the Federal Communications Commission's (FCC) ordering AT&T to bring all of its interstate services up to the same rate of return, as the article reported. That approach, the so-called fully distributed cost concept, is thus far only a proposed FCC decision, as advocated by the Common Carrier Bureau.

R.G. Berglund
Cherry Hill, N.J.

Let ACM Members Decide

It was disgraceful to witness Jean Sammet's last-minute efforts to block Herb Grosch's richly deserved election as president of the Association for Computing Machinery (ACM).

Having failed to keep his name off the ballot, she has now orchestrated a mammoth and highly unethical direct-mail campaign to elect Carl Hammer.

Why doesn't Sammet let ACM's highly intelligent membership decide between these fine men?

Gordon Smith
Greenwich, Conn.

CDP No Guarantee

In response to the April 12 article on the Certificate in Data Processing (CDP) as a "credential reliable enough to serve as a basis for licensing or other regulations" – if the idea weren't so frightening, it would be downright laughable.

The CDP exam measures data processing proficiency and does that very well. Yet the respondents who saw the CDP as a viable basis for regulation used the words "quality" and "responsibility." Are we to believe that quality and responsibility are the logical products of mere proficiency?

Remember, the CDP exam not only measures a programmer's ability to produce valuable time- and energy-saving data processing systems. It also measures his ability to use the computer to embezzle. No exam or attempt at regulation is going to bolster an individual's sagging morality.

In my view, this is one step in the Society of Data Processors (SCDP) premeditated plan to impose a "closed-shop" concept on the DP industry.

Barbara Floyd
Denver, Colo.

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Monitor Cuts CPU Time 90% on Broker's Daily Run

By Don Leavitt
Of the CW Staff

NEW YORK – An on-line system for displaying current customer account information on CRT terminals in local offices had been developed and was ready for implementation early last year at Merrill Lynch, Pierce, Fenner & Smith, Inc.

But the system had a problem, according to Michael Grackin, manager of performance measurement for the brokerage house. The program that selected offices and customer accounts for the data base took so long to run each night that the file wasn't ready for business the next day.

Early attempts by the programmer working on his own to improve the data base selection program were to no avail, Grackin said. But the company had previously acquired the Strobe program performance measurement package from Programart Corp. in Cambridge, Mass.

Strobe monitors a program while it is executing and then prints a profile report showing how the problem program spends its time on the computer. By highlighting the time-consuming areas of the run, Strobe in effect leads the programmer to what might be the most useful modifications.

Savings Exceed $300,000

Using its normal computer cost algorithm, Merrill Lynch has estimated that the improvements made in this one program have achieved an annual savings in excess of $300,000, Grackin said.

The improvement effort consisted of running the program while Strobe was monitoring it, checking the Strobe output, modifying the program and rerunning with Strobe.

Specifically, by using Strobe, the company cut the elapsed time required to create the data base customer accounts from more than four hours to just one hour. CPU time was chopped 90%, from 120 to 12 min/day.

Grackin also found another payoff, one that couldn't be quantified, but that bodes well for the future. The Merrill Lynch programmers learned some valuable lessons about the relative effectiveness of the various PL/I programming techniques, he said.

The first Strobe report showed the run was taxing the company's IBM 370/168, but only 20% of the time was spent in PL/I code directly. More than half the CPU cycles were used by two library routines in the IBM-supplied logic.

Reference manuals indicated these routines were used to compare unaligned bit strings. The programmer had used bits for setting switches to indicate which Merrill Lynch offices were to be included in the data base.

The format of the office switches was changed to character representation and "a few other changes" were made at the same time, Grackin said. Although the run timings overall weren't much different than before, the bit string manipulation routines had virtually disappeared.

Another library routine, however, had shown up as the heaviest user of CPU time. This one handled data structure mapping or computing the size of the data, which varies from one account record to the next. The routine was apparently invoked because in the "incidental" changes, the programmer had defined a variable-length record with PL/I's REFER option.

The programmer determined he could add half-a-dozen lines to explicitly compute the variable size and thereby avoid the REFER option. With that change, a third Strobe run produced the hoped-for results in performance improvement.

Run time was down to slightly over two hours and CPU time had fallen to the 12-minute mark. But other parts of the Strobe report showed new ways the run elapsed time could be shortened, Grackin said.

Tape Swapping

The time distribution portion of the Strobe output showed that for "considerable periods of time" – in Grackin's words – the computer was prevented from working on the problem program.

The Merrill Lynch team surmised that the wasted time was spent waiting for tape reels to be rewound and replaced. Through JCL changes, they assigned two tape drives to each file to eliminate the reel swapping time.

A Strobe run with the extra tape drives showed elapsed time down below an hour while CPU time remained at the 12-minute level achieved earlier. The tuning effort had been successful.

ADR Adds On-Line Support to 'Librarian'

PRINCETON, N.J. – A conversational version of the source program management system from Applied Data Research (ADR), the Librarian/Online (LIB/OL) allows users to perform all Librarian functions from IBM Customer Information Control System (CICS) terminals.

In addition, LIB/OL provides on-line data preparation, editing and remote job entry facilities, ADR said.

There are two versions of LIB/OL: BX and IX. LIB/OL-BX performs updates to a source program library by a remotely scheduled batch execution of The Librarian.

LIB/OL-IX executes The Librarian during the programmer's terminal session so that the results of updating the library can be immediately verified. The IX execution is done within a CICS partition. LIB/OL-IX has hot reader support for DOS/VS, a spokesman added.

Both versions allow the programmer to display all or a portion of a program on a CRT screen and browse either forward or backward through the program.

A split-screen design lets the programmer see source statements on the lower portion while updating them in the upper portion.

The generalized remote job entry capabilities of LIB/OL allow programmers to prepare and submit jobs to OS or DOS from a terminal.

LIB/OL, like the batch Librarian, is operational under OS and DOS.

A fully-supported option of The Librarian, LIB/OL can be purchased on a permanent basis. The price of LIB/OL-BX is $1,700; LIB/OL-IX, is $3,500. Monthly rental plans are also available. The batch Librarian and CICS are prerequisites to LIB/OL.

ADR's Software Products Division is at the Route 206 Center, CN-8, Princeton, N.J. 08540.

Mark IV Table Lookup Enhanced

CANOGA PARK, Calif. – The Advanced Table Lookup (ATL) special feature recently made available to Mark IV users by Informatics, Inc. provides them with several facilities, according to the vendor.

In particular, ATL allows the user to encode/decode information to simplify internal handling, to reduce file sizes by storing multiuse data only once, to search tables with a variety of logical operators, to use fewer entries to define tables which still produce desired results and to report results in any specified format, Informatics said.

The feature supports three table types – displacement, sequential or binary – and five ways to search the tables. Both data translation and data transformation capabilities matching values, nearest values – with a choice of high or low or values derived by linear interpolation.

Automatic table lookup operations can be specified by defining a result field once, when the file is defined. All subsequent references to that field in any Mark IV request cause the table lookup operation to be performed "transparently" without any further action by the user.

For more complex applications where processing or selection criteria require it, table lookup operations can be performed procedurally within a Mark IV request. A single statement is all that is required, according to Informatics.

The single-statement entry can be coded to find table results equal to the search arguments, or equal to or nearest the argument. Alternatively, users may seek equal to or nearest and bigger, or equal to or nearest and smaller than the search argument.

Otherwise ATL may be used to give an interpolated value based on the table values bracketing the search argument, the vendor noted.

ATL is now available for all six Mark IV models, and for IBM 360/370, Siemens 4004 and Univac Series 70/90 mainframes.

Price of the updated table lookup – the very first Mark IV special feature was a simpler table lookup function – is $3,700 beyond the cost of the Mark IV mode itself.

Informatics, Inc. is at 21050 Vanowen St., Canoga Park, Calif. 91304.

Harris CPUs, 'Total' DBMS Linked

FORT LAUDERDALE, Fla. – Harris Computer Systems has announced an enhancement to its Series 100 and 200 virtual memory computer systems with a data base management system that it said will be available in early October.

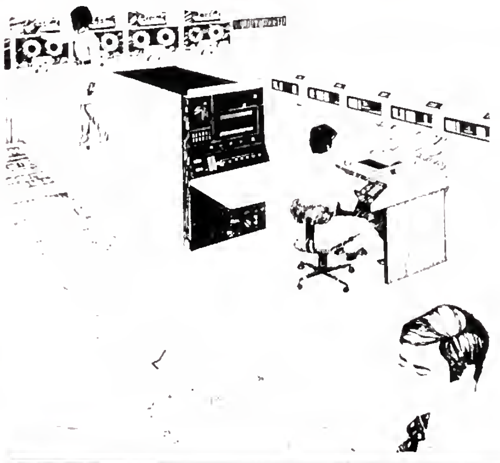
Cincom Systems' Total is currently being adapted by Cincom to operate on the Harris equipment. Total is a host language system that will interface with Harris Cobol, Fortran, RPG-II and Assembler languages.

Total is also a system that will allow growth in a modular fashion, from a small single application with two or three data files to a large sophisticated data base/data communications structure with very little impact on the previously implemented systems, Harris said.

The data base management system will be available as an option. It will involve no hardware changes, the vendor said. Price of the Total system will be approximately $10,000.

Harris is at 1200 Gateway Center, Fort Lauderdale, Fla. 33309.

Musing of a DP Manager



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'Imdoc' Handles Text or Files, Keying on 'Any Word or Phrase'

ELMSFORD, N.Y. With the Imdoc software from the Mathematical Applications Group, Inc. (Magi), researchers working from on-line terminals can access and manipulate unformatted textual information or fixed field files, the vendor said.

Imdoc can be used to search the data base for "any word or phrase." Once documents or records with the desired phrase have been identified, they may be edited, sorted for conventional computer output or formatted for photocomposition operations, Magi explained.

The searcher is free to use "any" word or phrase because Imdoc posts each word or data element and its location to an index as it enters the system.

The size of the index is controlled, however, by the user's ability to designate – on a "stop" file – any words or phrase considered uninteresting, Magi said.

To aid searches in which the user's argument may not be identical to anything in the index, the software also provides translation, synonym, phonetic and root word search capabilities.

Both positive and negative Boolean operators are available to define the search more closely than with a single word, Magi noted.

If more than one pertinent document is located, the user may browse through the text using paging techniques.

Although Imdoc may utilize security features provided by the operating system, teleprocessing monitor or file management software with which it interfaces, it also provides some protection of its own.

User codes, for example, may be for access-only or for access and update privileges.

Imdoc has been installed and is now operational on Univac 1100 series CPUs as well as IBM 360/370 equipment, the vendor said. On IBM gear, it requires 64K bytes of storage.

The basic package is available for $60,000. Magi is at 3 Westchester Plaza, Elmsford, N.Y. 10523.

Benchmark Guidelines Issued

WASHINGTON, D.C. – The National Bureau of Standards (NBS) has issued *Guidelines for Benchmarking the ADP Systems in Competitive Procurement Environment* to help federal agencies in particular validate hardware and software performance.

The guidelines emphasize selection of samples of standard programs that are representative of the user's predicted actual workload at a minimum cost to both the user and the vendor, NBS said.

The booklet resulted from the activities of the Federal Information Processing Task Group 13, a committee established to advise the NBS Institute for Computer Sciences and Technology in its ongoing program in computer performance measurement.

The booklet, Fips PUB 42, catalog number C13.52:42, can be ordered for 45 cent/copy prepaid from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

CMG Adds D.C. Regional Group

WASHINGTON, D.C. – The Computer Measurement Group, Inc. (CMG) has formed a National Capitol Area Regional Group.

Lane Parsons of the Federal Computer Performance Evaluation and Simulation Center (Fedsim) has been named temporary chairman, according to Donald R. Deese, CMG president.

The initial meeting of this regional group is scheduled for 9 a.m. to 4 p.m. on May 19. Phil Kiviat, technical director of Fedsim and chairman of the Association for Computing Machinery's Sigmetrics, will be the keynote speaker.

Other speakers will address topics ranging from VS performance considerations to performance management. The meeting will be hosted by the Mitre Corp., McLean, Va.

CMG is a voluntary organization of practicing computer performance evaluation (CPE) analysts and professionals interested in the development of the CPE technology.

Regional groups of CMG stimulate the exchange of CPE information at the local level, by holding meetings, typically publishing a regional newsletter and actively promoting CPE, Deese said.

Parsons can be reached at Fedsim, Washington, D.C. 20330. CMG is headquartered at 4812 Sharon Road, Camp Springs, Md. 20031.

Parameters Drive Data Analyzer

ST. PAUL, Minn. – Janus,, a general-purpose data analysis software system from Saunders Software, Inc., operates in batch mode, maintains sequential files of individual records made up of user-defined data items and supports parameter card-controlled manipulation of the user's data base, according to the vendor.

Developed for use in social service program evaluations, Janus has been used in mental health research and for evaluating probation services and producing hospital management reports.

But it has also been used to maintain magazine subscription lists and retrieve technical publication summaries, a spokesman said.

Working with the available commands, users can produce cross-tabluations, simple statistical reports and frequency distribution graphs, he said.

Comparison-tabluation reports, attribute checklists and user-formatted outputs are also possible with Janus, Saunders added.

Object code for Janus, for use on IBM 360/370 installations under OS, can be acquired under rental or long-term lease plans. Rental, including maintenance, is $520/mo.

A one-time fee for installation and three to five days of training ranges from $450 to $750 plus expenses of the vendor staff, Saunders noted from 1411 Simpson St., St. Paul, Minn. 55108.

SR-52 Packages Available

DALLAS – Users with the Texas Instruments, Inc. (TI) SR-52 programmable calculator can now buy four software libraries – covering statistics, mathematics, electrical engineering and finance – from retailers.

The libraries list for $29.95 each. TI can be reached through P.O. Box 5012, MS/84, Dallas, Texas 75222.

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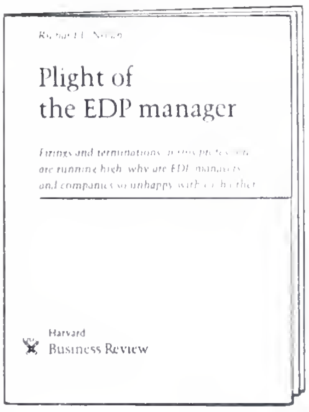

Richard L. Nolan

Plight of the EDP manager

Firings and terminations in this profession are running high; why are EDP managers and companies so unhappy with each other

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Performance Management—Part 1

All Facets of DP Environment Must Be Part of Plan

By Larry E. Hart
And Dan Coapstick
Special to Computerworld

In today's complex data processing environment, a formal program for performance management is essential to provide maximum service for every dollar invested.

Performance Evaluation

Both the state of the economy and the increased sophistication of computer managers have contributed to the increasing interest in computer performance evaluation (CPE) and performance management.

Technology provides the capability to increase system productivity, to increase growth capacity and to extend a system's useful life without necessarily increasing the DP budget.

Performance management encompasses considerably more than only a CPE effort by systems personnel. It must address the levels of performance for every facet of the DP function, including applications development, maintenance, planning, finance, the user community and, of course, the DP complex itself.

Since each of these functions affects and coordinates with the DP environment, they should both comply with and acquire the benefits of an appropriate performance management program.

Most Pressing Question

The development of a comprehensive program for performance management may be the ultimate goal of management. Initially, however, the most pressing question is "How do we get started – do we buy a hardware monitor, hire people or what?"

Actually, the first phase is to develop an understanding of what performance management is today. There are several alternatives available, including reading technical literature, attending either public or private classes, joining technical associations, talking to performance product vendors, hiring an experienced performance analyst or acquiring the aid of a performance consulting firm.

The criteria for the selection of the right method for you is your availability and budget. The simplest method is to attend a private course and join a professional society for the literature, sessions and contacts it affords.

With the background, the manager is now ready to embark on the definition of his program.

Time for Definition

At this point it is advisable to define both the program and the step-by-step procedure to be used. Program definition is the aspect most often ignored, but the lack of a program definition at this stage can have a catastrophic effect on the overall success of the program.

A valuable approach is to hire an individual experienced in the area of program definition or to contact an independent consulting firm to aid in the program definition.

It is also essential to plan to reach a total program of trending and forecasting as well as day-to-day system tuning and problem solving. It must be a comprehensive program for today *and* tomorrow.

The performance program affects today's costs and services but, more importantly, reflects on tomorrow's capability. Performance management is a proven technique for cost-effective DP management.

Many of the companies that claim bad experience with measurement simply disregarded the approach recommended above; they made the mistake of acquiring a software or hardware monitor to evaluate the capabilities of performance management, thinking they would worry about the required program planning later.

Plan and learn from those who are in the business – successful practitioners and experienced consultants. There is no reason to negate the benefits of a program via inadequate methods.

This article, the first in a two-part series, discusses the concept of performance management. In their next article, the authors will provide details of their approach to performance management.

For optimum success, the crucial aspects of a performance program must be management-controlled. Data collection is a means to an end, and the critical phases are program definition, measurement selection and data analysis.

Hart and Coapstick are with the performance services section of CACI, Inc.-Federal, Reston, Va.

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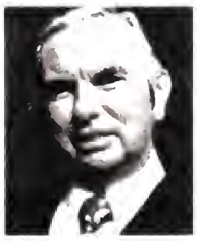
Pressure of rising budgets. Hardware/people costs are soaring, data processing volume is increasing, and the scope of EDP services is widening.

The challenge to the professional DP executive is to respond to these pressures as a businessman, by considering the alternatives available to get the job done.

The SBC alternative is now being used for hundreds of applications in the mainstream of the business, particularly those which require end-user responsibility. Typical applications generate decision-making information in such areas as corporate planning, cash management, product analysis, and forecasting.

How can SBC help you respond to the rising pressures of new applications, budget restraints and the changing business climate? As a DP executive, you may find the answers technically intriguing. But as a businessman, we know you'll find them eminently practical.



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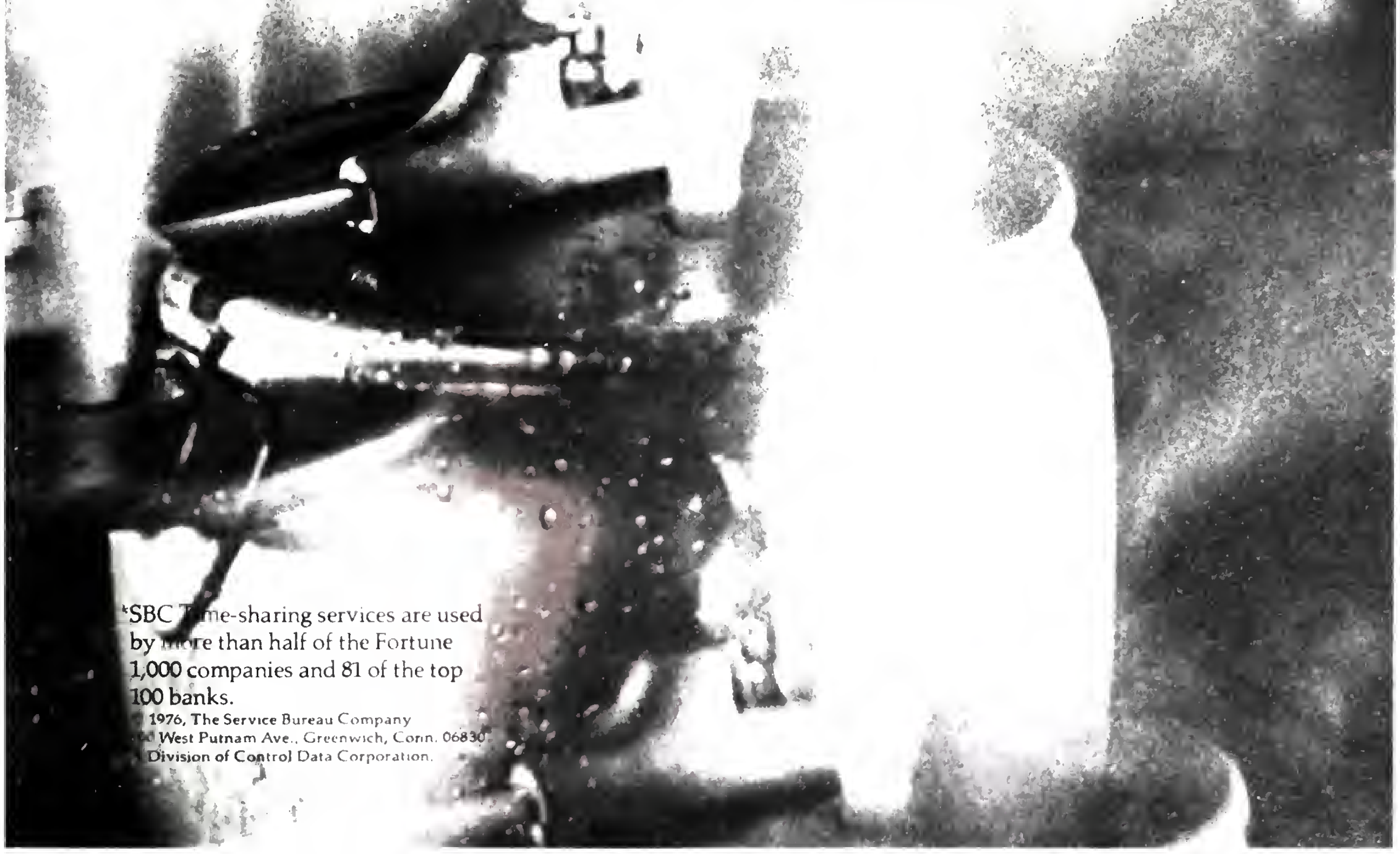

*SBC Time-sharing services are used by more than half of the Fortune 1,000 companies and 81 of the top 100 banks.

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SRM: Users' Best Tool or Knife to Cut Their Throats?

By John J. Hunter

Special to Computerworld

Optimists have called the System Resource Manager (SRM) the greatest tool ever placed in the hands of users; pessimists have other ideas – they call it a knife to cut your own throat. Both have pretty good cases.

What is the SRM; why was it introduced and what can you expect from it? SRM is a dynamic job scheduler and resource allocator which allows installations to closely control how a job is serviced from initiation to termination (normally or abnormally, as the case may be). It is part of IBM's OS/VS2 Release 2.

While SRM is the key element in the efficiency game for Virtual Storage users, Release 2 also sports a number of system changes and additions which should speed things up considerably.

Among the enhancements are multiple virtual storage (MVS) areas, permitting each user to have his own 16M-byte virtual storage; and a hot new data-set-handling methodology called virtual I/O.

SRM possesses many features one would expect in an ideal scheduler/controller: it permits users to determine how the resources will be allocated to a job and when they'll be assigned; SRM automatically monitors the job mix to ensure that a job in a particular class gets its proper service; and SRM automatically adjusts the job mix to attain optimal system resources usage.

SRM accomplishes all this through three submodules – a workload manager, resource use routines and a system controller – plus a lot of input from the user.

Workload Manager

The workload manager controls the relative rate at which processing resources are provided to individual jobs. The rates are established as part of what is called the Installation Performance Specifications (IPS).

With IPS, the user specifies the amount of performance any particular job will receive under any workload condition. SRM is responsible for keeping track of the job's progress and controlling the rate at which resources are allocated. IPS specifications include:

- Performance groups – jobs that should be managed in distinguishable ways.
- Performance objectives – distinct rates, called service rates, at which CPU, I/O and real storage resources are provided to jobs in a performance group at a certain workload level in the system.

Service rate is the number of service units per second a user should receive; a service unit is a measure of processing resources.

Service units are the measure of the amount of processing resources provided and are computed as a combination of the three basic processing resources:

- CPU execution, where one unit is the execution of 10,000 instructions.
- I/O measure, i.e., the amount of input/output units accumulated.
- Real storage occupancy, i.e., one page occupied for some multiple of CPU execution units.

The user can supply coefficients by which to multiply each of these factors, as illustrated by A, B and C in the following formula: Service units = A (CPU) + B (I/O) + C (frames).

Although the performance objectives are only concerned with service rates and not the use of any particular resource, the user can emphasize the relative importance of a resource by weighting it in service-unit formula. For example, if real storage is critical, the user can increase the value of C in the service formula.

Performance Groups

To ensure that jobs with similar processing requirements are serviced uniformly, SRM requires that such jobs be divided into performance groups or job classes. Each such group includes both batch and time-shared jobs.

Under SRM, users may specify the rate of service a job will receive to meet performance objectives; the system guarantees that the rate will be met as the workload characteristics change.

This user specification is called a performance objective. Since the processing loads vary over time, users may employ performance objectives to specify the varying service relationships between groups of users. This way, performance groups deemed high priority will be assured of the necessary service to finish on time.

While on the surface such servicing might discriminate against jobs in lower performance groups, it does not. The workload manager constantly reviews the processing mix and can take necessary steps to ensure that low priority jobs get reasonable service.

The resource-use routines consist of a set of algorithms that make scheduling recommendations intended to optimize the utilization of system CPU, I/O, main storage and paging resources.

The CPU load adjustment algorithm continuously monitors CPU utilization. When this value either goes above or below an acceptable user-determined range, the load-adjustment algorithm recommends swapping of one or more heavy CPU-consuming jobs into main storage in the case of CPU underload, or out if the CPU is overloaded.

The I/O load-balancing algorithm attempts to maintain a dispatchable job mix that will evenly use the logical channels. The algorithm monitors the fraction of I/O requests delayed on each logical channel and ascertains whether this measure of load falls within an acceptable range.

When an imbalance – either an overload or underload situation – occurs, the algorithm seeks out a job known to be a heavy user of the imbalanced resource and may then recommend a swap.

The main storage occupancy algorithm attempts to ensure that main storage is

(Continued on Page 22)

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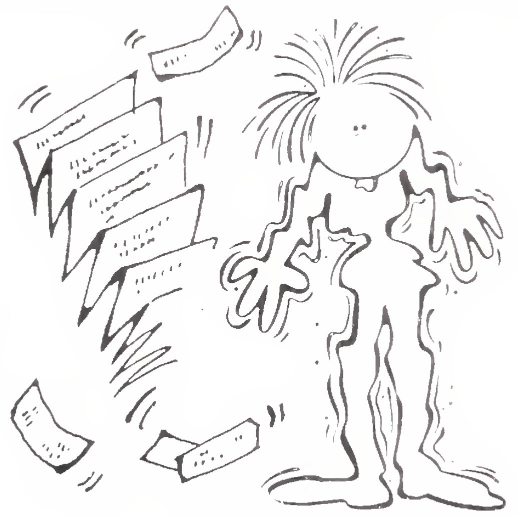

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SRM: Users' Best Tool or Knife to Cut Their Throats?

(Continued from Page 21)

not overutilized or underutilized. It does so by constantly monitoring the number of working sets (groups of currently used application pages) to ensure that they neither waste available storage nor overload it. When the storage is overloaded, a heavy user is swapped out to make more free frames available to other users.

To prevent this corrective action from occurring too frequently and thus adversely affecting overall processing, the main storage occupancy algorithm evaluates the consequences of all anticipated swaps in an attempt to keep the number of free page frames (available page frame count) near a target which is above the minimum level (low threshold).

The page replacement algorithm scans a job's working set and removes those pages not referenced. This is quite a departure from the page-stealing actions of Release 1, which employs system-wide page stealing from all jobs. Some users feel that this indiscriminate stealing of pages contributed heavily to the well-known thrashing problem that has plagued VS.

By stealing from a job or group that have ineffective working sets, IBM claimed excessive paging should be reduced. Whether this is true remains to be seen.

The resource use routines also contain three other algorithms which are designed to ensure efficient use of system resources. These are the device allocation, automatic priority group and ENQ/DEQ algorithms.

The device allocation algorithm keeps track of which storage devices are attached to which channels and attempts to assign data sets to the most lightly used channels. In assigning data sets, the algorithm attempts to keep them on the same logical channel, but not necessarily on the same physical device.

The automatic priority group algorithm dispatches jobs based on the degree on which they are I/O-bound. Heavily I/O-bound jobs are given higher dispatching priorities over CPU-bound jobs.

The ENQ/DEQ algorithm determines whether a job holding a resource is delaying other jobs requiring that resource. The job holding the resource may be running or may be unqueued awaiting CPU service.

In either case, the algorithm makes the job nonswappable, thus assuring that it will receive the necessary CPU time to permit it to complete and release the resource.

Processing Under SRM

The system controller – or control function – monitors the activities of the workload manager and system use algorithms to settle any conflicts that might arise from the recommended action suggested by each.

You see, processing under SRM amounts to a vote by committee, with the committee members being the various algorithms. As in all committees, the members are charged with gathering information and presenting it to a chairman for action.

The SRM chairman is the system controller. Each committee member has its own special interests, and each will try to influence the chairman if a conflict occurs. The workload management algorithm, for example, wants to ensure that jobs receive resources and service as needed to satisfy the IPS. The resource-use algorithm monitors wants to ensure that no shortages or bottlenecks occur.

As you can imagine, the wants and needs of the various committee members can often be in conflict. Such conflicts are decided by the system controller.

The committee takes votes at full-analysis and partial-analysis meetings. A full analysis is called by the chairman (system controller) at predetermined intervals; here all members are ordered to examine their internal queues and assign processing weights to each job.

The weight is determined in light of the job's current status. If a job is causing a bottleneck by tying up a critical resource, the resource-use algorithm will rate it low.

At the full analysis meeting, job weights are added algebraically. If they beat the resource factor coefficients as assigned by the user, they become candidates for new or continued servicing.

The partial analysis meeting is usually called by a committee member when it senses that the jobs under its control are becoming critical. Such a meeting can occur at any time, and the voting process is the same as during the full analysis.

Aside from the weights assigned, there is another factor that influences whether and how a job is serviced, namely, how long a delayed job that is holding a needed resource will be permitted to wait. Supervision on these jobs is performed by the ENQ/DEQ algorithm.

As part of the IPS weighting procedure, a delay value is assigned to each job. When this value is reached, the ENQ/DEQ algorithm informs the committee that his job must be force scheduled.

The system then gives the job a long CPU shot in hopes that it will finish and release the resource. (The size of the CPU shot is based on a statistical prediction that a certain class of job can finish processing in a given time.) If not, the job is swapped out and the resource is released.

Overall Benefits

If SRM works according to specs, IBM critics will be hard-pressed to find somthing to complain about – as far as processing efficiency is concerned. The system seems to have solved all the main shortcomings associated with VS, while provided users with a degree of job-processing control.

An in-depth analysis of all the new facilities offered by OS/VS2 Release 2 is available for $25 from Auerbach Publishers, 6560 N. Park Drive, Pennsauken, N.J. 08109.

Hunter is the project editor for Software Reports *prepared by Auerbach.*

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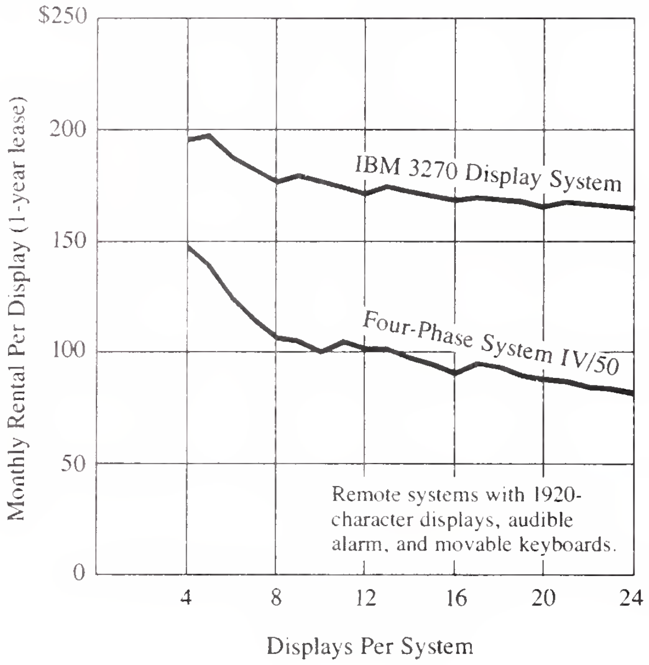

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Advanced Technology for Distributed Processing

'Page8' Backs PDP-8 Macros

RIVER FOREST, Ill. – Page8 from Dewar Information Systems Corp. (Disc) is an automatic paging macroassembler that runs under the OS/8 environment on Digital Equipment Corp. PDP-8s.

The language processor permits use of full address arithmetic and automatically adjusts offset references when required, the vendor said.

The macro facility incorporates backward and forward assembly branches, nesting of instructions, symbolic concatenation or linking, defaulted arguments and character string processing. In addition, support for external symbol directories, annotated cross-reference lists and "total syntactic error detection" ease the programmers' chores, according to a spokesman.

A perpetual license for Page8 is available for $580, Disc added from 622 Forest Ave., River Forest, Ill. 60305.

'Minidump' Update Eases Debugging

ARLINGTON, Va. – Another version of Minidump has been announced by Data Services Corp. of America (DSCA). Minidump is an intelligent program dump routine first introduced in the fall of 1974 as an alternative to IBM's Sysabend and Sysudump.

Minidump executes significantly faster and produces far less output than the IBM products, DSCA claimed. Whereas Sysudump, the smaller of the IBM dumps, typically produces some 80 to 200 pages, "Minidump may generate less than 10," the independent vendor said.

Enhancements in the updated Minidump are said to include the display of the main module areas including Cobol working storage and data control blocks (DCB) and the display of user subpools in their entirety to ensure printing of I/O buffers and work areas.

Parameters Shown

In addition, the package supports elimination of some redundant information, display of areas containing parameters passed to a subprogram as well as to the main program and production of subtask dumps even if the main program does not Abend, DSCS said.

When installed, Minidump in effect becomes part of the operating system. It can be used with any IBM OS or OS/VS system, but is not available for DOS, the vendor said.

Minidump for OS-based shops costs $1,520; VS compatibility adds another $460 to the package price.

DSCA is at 1515 Wilson Blvd., Arlington, Va. 22209.

Relocatable DOS Modules Eyed by 'Dossier's' CPA

PORTLAND, Ore. – A documentation and standards package for IBM DOS and DOS/VS installations, Dossier has been extended by Computer Concepts, Inc. (CCI) to examine relocatable libraries as well as core-image libraries as sources of information about program usage.

The Called Program Analysis (CPA) facility compares relocatable libraries with core-image libraries to determine which CALLed routines are included in production jobstreams. CPA generates five reports covering aspects of relocatable library usage and management, CCI said.

CPA's most apparent use, according to the vendor, will be in identifying programs that must be changed or relinked to accommodate changes to CALLed programs. Essential linkedit information for all production programs is consolidated in one of the reports, the spokesman added.

Another report shows all duplications of modules on the relocatable library. These are usually obsolete test versions which, along with unused modules – revealed in another CPA report – can be deleted from the library, CCI explained.

Dossier, including CPA, costs $75/mo on a one-year license. The package is available now from CCI at 6443 S.W. Beaverton Highway, Portland, Ore. 97221.

DP Self-Study Course Available From NCR

DAYTON, Ohio – An NCR self-study course covering fundamental DP concepts and terminology includes a monitor guide, student text and flowcharting supplement.

The student-text portion includes 11 lessons and can be completed in from 30 to 35 hours, NCR said.

The course, which costs $50, can be ordered through NCR Corporate Education Distribution Services, Dayton, Ohio 45479.

Weld Stresses Mapped by UCS

KANSAS CITY, Mo. – Werco, an engineering program recently added to the United Computing Systems (UCS) library, is designed to compute stresses in vessel or tank shells at nozzle or clip connections.

It requires only the basic weldment to obtain a solution, according to UCS.

The resulting stress magnitudes are performed in accordance with the methods defined in the Welding Research Council Bulletin No. 107 entitled "Local Stresses in Spherical and Cylindrical Shells Due to External Loading," UCS said.

The program's output prints stresses relating to the axis system used for the input. Origins and classifications of the stresses computed are also defined.

The program was developed by AAA Technology and Specialties and is offered by UCS on its Uninet communications system which serves over 100 cities across the U.S. and Canada.

UCS is at 2525 Washington, Kansas City, Mo. 64108.

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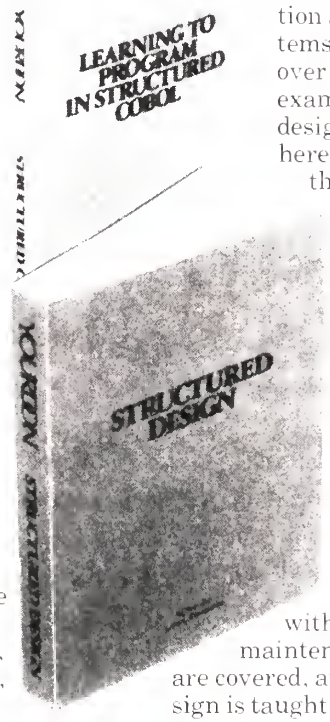
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Structured Design by Edward Yourdon and Larry L. Constantine has already been acclaimed by preliminary reviews as *the* definitive work on such design concepts as structure charts, coupling, cohesion, transform analysis, transaction analysis, communication of data in modular systems, packaging of modules, and implementation strategies for modular systems. This easy-to-read text, with over 600 pages and countless examples, thoroughly discusses design techniques that have heretofore been glossed over in the literature.

Learning to Program in Structured COBOL by Ed Yourdon, Chris Gane and Trish Sarson is intended for people who want to learn to program in COBOL. No previous knowledge of computers is needed. The book deals with the implementation of basic structures in COBOL, using an appropriate subset of the language. Logic structures, nested IFs, and decision tables are dealt with in detail; creation and maintenance of tape and disk files are covered, and the use of structured design is taught in sufficient depth to enable the reader to design, code and test a simple accounting system.

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Will Handle 6.3M Bit/Sec, FCC Told

SBS Plans Full Range of Services Starting Mid-1979

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – Satellite Business Systems (SBS) will begin operations in "mid-1979" with a full range of data services from 600 bit/sec up to 6.3M bit/sec.

Transmission of data on the SBS satellite network "will be transparent to character code, message content and line protocol," according to tentative operating data filed with the Federal Communications Commission (FCC).

The information was presented to the FCC as part of the SBS application for an operational system (known as a Section 214) and in response to questions sent to SBS by the FCC's Common Carrier Bureau.

Data service will be provided at 600-, 1,200-, 2,400-, 4,800- and 9,600 bit/sec; 19.2 kbit/sec; and 56 kbit/sec in addition to higher speeds. Standard voice-grade modem interfaces as well as RS-232 and CCITT interfaces will be used, the application said.

SBS will monitor the status of "all major system elements" by means of a System Management Facility (SMF). Consoles will be installed at customer locations to provide the network user "with utilization and status data on his network," the FCC was told.

These consoles will be connected to the SMF via the satellite to enable the user to access that portion of the SMF data base which pertains to his network, SBS said.

SBS users will pay a monthly rate for network service based on a minimum service period, according to the application. The total network charge will be based on the amount of satellite capacity dedicated to the user's network, number of earth stations, number of earth station access ports and terrestrial connecting links.

Separate charges will be set for "on-demand access" to a pool of additional capacity service, SBS said. Rates to be charged for satellite services will be filed at a later date, it added.

Unattended Earth Stations

Unattended earth stations at user premises will be used "wherever practical" and these will contain radio frequency, burst modem and satellite communications controller equipment, SBS told the FCC.

The exact number and location of these earth stations will be determined by user requirements, but "several hundred" small earth stations will be installed during the lifetime of the initial system, SBS said.

An average unattended earth station will include 51 voice ports, seven low-speed data ports and two medium-speed data ports. One high-speed data port will be available for every three earth stations.

SBS will interconnect with the facilities of other common carriers where such an approach is cost-effective, it said. If the user provides his own terrestrial connecting facilities, SBS will connect its access ports to the user's terminal panel.

SBS will also "consider the use of SBS-owned microwave radio, coaxial cable and wire pairs" for the required terrestrial facilities.

Service will be provided to the 48 contiguous states exclusive of Alaska and Hawaii.

As part of a preoperational program, SBS will operate two earth stations at Los Gatos, Calif., and Poughkeepsie, N.Y., for internal satellite development work to be conducted by IBM. The modulation and access equipment at these sites will be owned by IBM.

These facilities will not be used "to reduce any of the facilities and service" which IBM now receives from other common carriers, SBS said.

SBS is a subsidiary of IBM, Aetna Casualty & Life and Comsat General.

Univac Initiates Terminal Family With Introduction of Three Units

By John P. Hebert
Of the CW Staff

BLUE BELL, Pa. – Univac has introduced two microprocessor-based intelligent terminal systems for general-purpose and remote batch applications and a third for text-editing printing and publishing applications.

The communications-oriented Universal Terminal System (UTS), designated the UTS 400 and UTS 700, are said to be able to take on many DP functions usually performed by a central computer.

The UTS 400 can operate as an intelligent remote terminal station or as a cluster of stations, Univac said.

It is a follow-on system to current Univac display terminals and is compatible with the Uniscope 100 and 200 communications procedures, the company added.

The UTS 400 reportedly can be operated over leased, voice-grade or private lines.

As a remote station, the UTS 400 can provide single-station capability with the option of attaching two additional slave stations.

In a large cluster arrangement, the terminal controller interfaces up to six slave stations to a single modem or multiplexer, Univac said.

In addition, the terminal can control peripherals including impact and non-impact printers, tape cassette units and diskettes, Univac claimed.

The terminal can be ordered in four CRT screen formats: 12 lines with 80 char./line, 16 lines with 64 char./line, 24 lines with 80 char./line and 24 lines with 64 char./line.

Eight Character Sets

Besides a U.S. character set, sets are available for use in the Spanish, Danish/Norwegian, Swedish, French, German and Katakana languages, according to Univac.

A set designed for UK use is also offered, it noted.

Acting as a general-purpose computer, the microprocessor controls operation of the terminal by executing the nondestructible programmed logic.

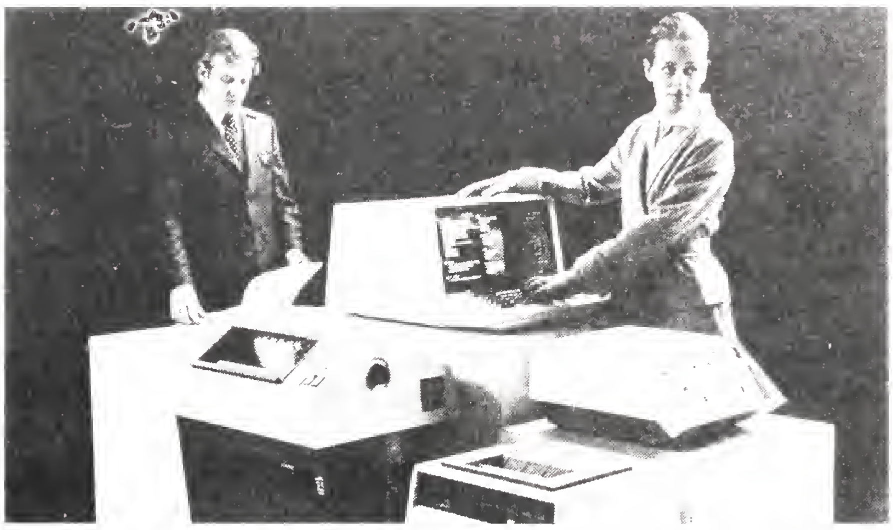
Maximum size of the storage is 36K bytes in a combination of read-only memory (ROM) and random-access memory (RAM), the company said.

The terminal system can reportedly transmit data either synchronously at speeds up to 9,600 bit/sec or asynchronously at speeds up to 2,400 bit/sec in Ascii code, Univac said.

A buffering system is optionally available to permit peripheral device activity to be overlapped with display operations, which enhances local use of peripherals.

The UTS 400 is equipped with parity generation and checking, automatic power-on confidence test, error logging and line monitoring.

Peripherals available for operation under the control of the UTS 400 include the Univac Model 800 thermal printer with 300 char./sec operation; the Communications Output Printer with a 30 char./sec print speed, the Model 610 tape cassette with a storage capacity up to 1.44M bytes; the 8406 diskette subsystem with 256K bytes of RAM; and the Terminal Multiplexer, the company said.


The micro-based UTS 400 from Univac can control the Communications Output Printer, the Model 800 printer, the Model 610 tape cassette and other peripherals.

The Terminal Multiplexer allows UTS 400 masters or terminal controllers to be connected into a data communications system at one system interface point; up to 16 masters or terminal controllers can be connected to a single modem, allowing a maximum of 96 terminals on one communication line, Univac said.

A master UTS 400 can accommodate up to two slave units for a total of three displays plus peripherals.

A controller can handle up to six slaves, plus peripherals, the vendor noted.

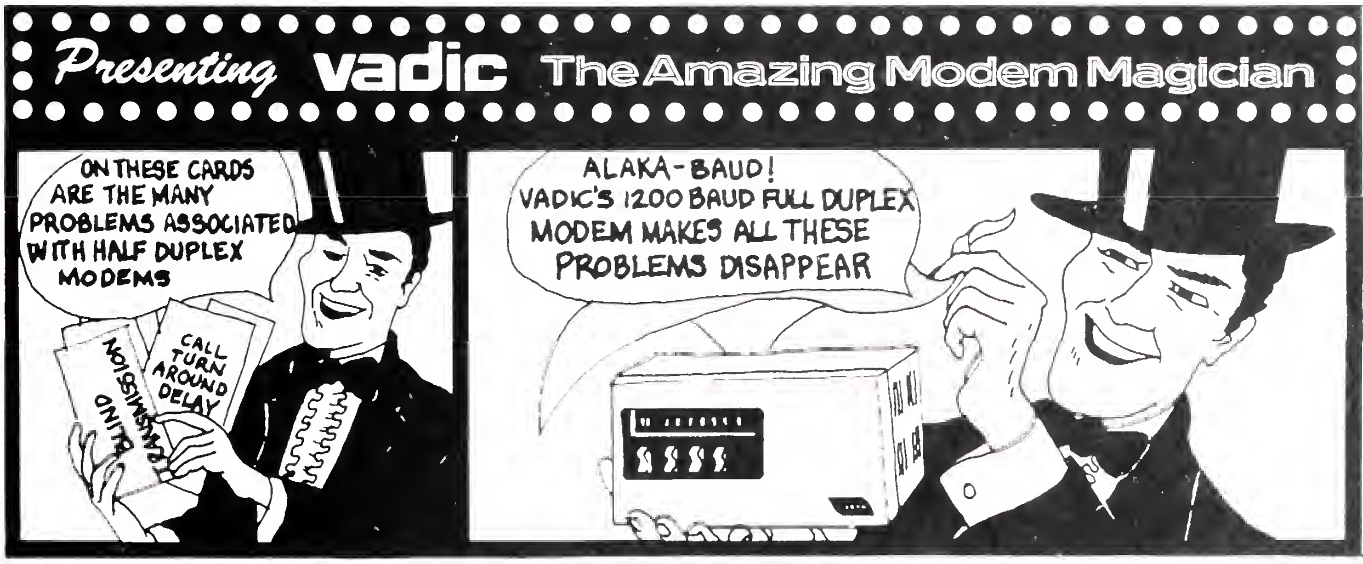
The UTS 700 operates both as a batch terminal system or as a remote batch terminal, Univac said.

As a batch system, it features concurrent remote batch emulation and batch operation, disk file management, system control language and error logging, according to the firm.

The UTS 700 sends data and job streams to a distant batch computing system for processing and receives output from the central site, it added.

An RPG-II compiler available with the system allows the user to write freestanding programs, a company spokesman said. Emulators are provided which permit the

(Continued on Page 32)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Works On-Line and Off-Line

Intertel Control System Tests Distributed Data Nets

BURLINGTON, Mass. Intertel Corp. has introduced a control system designed to accomplish on- and off-line diagnostic testing in large distributed data communications networks.

The NCS4000 combines network-level diagnostic testing with special commands that switch in spare modems or dial backup network lines when a malfunction interrupts data traffic, the company said.

The system reportedly tests parts of the network while the network is operating, unhindered by remote processors, multiplexers and concentrators; it can be used in point-to-point or multipoint networks.

The diagnostic system passes test signals around hub sites so in-depth tests can be carried out on-line on transmission lines, remote modems and terminals anywhere in the network, Intertel said.

The network control system includes the NCC 401 test diagnostics console and cabinet at a network's central site and Intetel MCS 1200, 2400, 4800 or 9600 modems at the remote sites, a spokesman said.

Intertel modems must be used at remote sites because of their different modulation scheme and the different intelligent electronics within the modems' printed circuit cards, he said. The modems can be used individually or in mixed combinations, he added.

The NCS4000 hardware and diagnostics are said to be transparent to the network's program and host computer and do not disrupt data transmission while testing parts of the network, Intertel said.

The system was designed to be run by regular computer room personnel. After a test has been run on the system, results are displayed on LED displays in English phrases on the control panel of the unit, the vendor noted.

A system operator at the central site runs all diagnostics and restoral functions without operator intervention at remote sites, it explained.

The NCS4000 reportedly works with any network configuration operating at transmission speeds from 1,200- to 9,600 bit/sec.

The system handles 10 primary high-speed lines and up to 400 secondary lines with transmission rates of 2,300 bit/sec – or up to an effective capacity of 4,000 lines, a spokesman added.

Applications of the NCS4000 include troubleshooting to identify problems correctly before calling for service and remedial action, in which the user can spot a problem and take corrective action independently with available "spare" lines, modems or terminals through commands initiated at the central site on the NCC 401 console, the company said.

On-Line Tests

Among the on-line tests which can be performed through the system are on-line automatic sequence testing of network equipment (except for modems), line continuity and level tests, terminal disabled and power monitoring, modem test and lead select test, Intertel said.

Off-line testing of the network includes tests of local and line loops, transmit quality, transmit/receive quality, tests of modems and the display capability of the NCS4000 by inserting transmit errors and receive errors and a block length test, it added.

The NCS4000 also accomplishes special test functions initiated and executed at the remote site without operator intervention. Special functions run on-line while the network is operating, according to Intertel.

The price of an NCS4000 depends on the size of the communications network. A total system, including the NCC 401 and Intertel modems, sells for approximately $50,000 to $100,000, the company spokesman said.

The network control system can be installed in a few hours in any network without disturbing hardware configurations or programming, Intertel said from 6 Vine Brook Park, Burlington, Mass. 01803.

Northeast Electronics Has Portable Test Set

CONCORD, N.H. – A portable transmission test set has been introduced by Northeast Electronics.

The Model TTS 44 measures level, noise and frequency, features a large digital readout and can withstand rugged use, according to the firm.

The unit operates for up to seven hours on rechargeable gel cell batteries or from 115 or 230 Vac.

The TTS 44 has dual send/receive channels with single-switch control to simplify testing to loop-around and Code 104 equipment, the vendor said.

With a wideband frequency range of 35 Hz to 60 kHz, the set can reportedly handle the transmission test requirements of nearly all telecommunications circuits in common use including voice, program and data circuits to 50 kbit/sec.

The Model TTS 44 costs $1,750 from Northesat Electronics at Airport Road, Concord, N.H. 03301.

Prentice Synchronous Modem Handles 2,400 Bit/Sec Data

PALO ALTO, Calif. – Prentice Electronics Corp. has brought out the P-201B/C, a full-duplex or half-duplex 2,400 bit/sec synchronous modem.

The unit permits data transmission over common carrier leased lines, private lines or telephone company Direct Distance Dial (DDD) networks as prescribed by appropriate tariffs and regulations, the company said.

The P201B/C is said to operate in the same system configuration as Bell System WE 201B/C data sets.

The unit comes with a standard RS-232C interface, all Bell 201B/C options are standard or strap-selectable, according to the vendor.

Prices for the P201B/C start at $995 from the firm at 795 San Antonio Road, Palo Alto, Calif. 94303.

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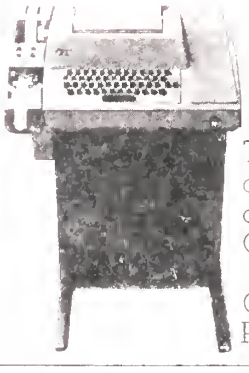

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Three Models Initiate Univac Intelligent Terminal Line

(Continued from Page 29)

UTS 700 to communicate with a host as if it were the emulated terminal, he added.

The disk operating system functions as a large utility program. RPG-II application programs communicate with the operating system whenever I/O operations are required – for job initiation and termination, file management and control and for general resource management through standard interfaces.

Accommodating private as well as dial-up lines, the system supports card readers, punches, line printers, diskettes and disk cartridges.

It is said to emulate Univac 9200/9300 (RM1) and 1004 systems, the Univac DCT 1000 and 2000 Ascii and IBM 2780/3780 terminal systems.

Three Connection Forms

The architecture of the UTS 700 consists of the processor, main storage and I/O options and is configured around a system bus which transmits data at 1M byte/sec.

Connections to I/O devices are of three forms: direct memory access (DMA) for mass storage devices, shared DMA to allow multiplexing of printers or workstations and communications line adapters (CLA), Univac said.

The processor, with 65K directly addressable memory, is a bit-parallel binary device with an 8-bit accumulator, six 8-bit programmable work/index registers, four condition flags and an 8-bit external data path, it said.

Two speeds of card readers – 300- and 600 card/min – and a reader/punch are offered with the UTS 700.

Two printers with various fonts and character sets are also available: a 600- and a 300 line/min printer, the company said.

The UTS 700 offers a range of disk subsystems from 1M byte of diskette through 40M bytes of cartridge disk, it said.

The UTS 400 Text Editor is a special-purpose model of the UTS 400. Microprocessor programs for text manipulation are contained in ROM, incorporated in the text editor, Univac said.

Additional RAM accommodates text data storage, text management key control, the host command adverb area, the character string manipulation format area and the transmission buffer area, according to the vendor.

The RAM is expandable in 8K-byte increments to a maximum of 16K, representing a total of 229 lines of resident text, it said.

Three screen presentations are offered with the UTS 400 Text Editor – full screen of 23 90-character lines; split-screen of two independent sets of text (23-line, 39 char./sec); and a format mode with 10 lines of 80 characters for string-format text manipulation, the company said.

Scrolling to the beginning or end of the 229 possible lines of resident text is a Text Editor feature. In the split-screen mode, either set of text can be scrolled independently, it added.

The UTS 400 Text Editor includes a 125-character alphanumeric keyboard, the Univac spokesman said.

System Prices

The cost of a UTS 400 terminal system ranges from $9,000 for a one-station configuration to $30,000 for a six-station configuration.

The prices include microprocessor and memory expandable in 8K increments to 24K bytes; communications; device I/O; CRT keyboard for each station; and all software, the spokesman said.

Rental prices for the same configurations range from $273/mo to $938/mo and include maintenance, Univac said.

A typical UTS 700 system is priced at about $59,000 or $1,709/mo including maintenance, a processor with 65K memory, two diskette drives, a 600 card/min card reader and a CRT workstation, the spokesman said.

The price for the UTS 400 Text Editor is $8,100 or $347/mo including maintenance, according to Univac at P.O. Box 500, Blue Bell, Pa. 19422.

Test Sets Get Word Converter

PROVIDENCE, R.I. – International Data Sciences, Inc. (IDS) has introduced the Model 25 full-duplex long word converter, designed for installation in any Western Electric 914B or Sierra 1914B data test set.

The Model 25 is a kit consisting of two printed circuit boards and hardware, a control panel, harnessing and a switch-marking overlay.

Installation of the kit adds a complete 2,047 bit test pattern transmitter and receiver, a transmit error capability and a printer output connector, IDS said.

The Model 25 extends the capability of the test set to allow the full-duplex testing necessary to perform loopback tests and two-way end-to-end tests of data transmission links, the firm said.

The unit costs $750 and deliveries are from stock. IDS is at 100 Nashua St., Providence, R.I. 02904.

NETWORKING THE TSP* SYSTEMS

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In addition to traditional "host-satellite" networks, we have systems in operation that include so-called "ring" networks, "star" networks, and many more. The important thing is that you can link your computers together in any format you want. Provide each computer with whatever peripherals are best suited to your purpose. And leave the rest to MAXNET.

We figure the best way to give you an idea of what MAXNET can do is to give you some examples showing how other people are now using it.

We invite you to study these case histories. More important, we invite you to get in touch with us so you can get a first-hand look at how well they work. Which is a lot more convincing than just listening to us brag about them.

Meanwhile, we have a couple of brochures you should send for.

Our MAXNET brochure deals with computer networking, and how MAXNET makes it all happen.

The other is a thirty-two page booklet that explains in detail exactly what we mean by MODCOMP "TSP." The Total Systems Performance that has made MODCOMP first choice of many of the world's toughest computer buyers.

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System Ties Phones, Recorders to CPU

Doctor's Idea Proves Cure for Test Reporting Delays

By John P. Hebert
Of the CW Staff

FRAMINGHAM, Mass. – Working on the "very real and serious" problem of health care efficiency, a Boston physician conceived the idea of a computer-aided communications system to report laboratory test results.

Since the implementation of the Rapid Telephone Access System (RTAS) in May 1975, at Framingham Union Hospital here, there has been a significant reduction in the time from physician's dictation of test results to first access of patients' lab reports, according to Dr. Gerald M. Kolodny.

In addition, there has also been a "trend toward reduction in patients' length of stay as a result of the system's experimental implementation in the 329-bed teaching hospital affiliated with the Massachusetts General Hospital (MGH), the associate professor at Harvard Medical School and director of the Radiology Research Laboratory at MGH said.

Kolodny's conception of RTAS resulted from his inability to find normal hospital engineering criteria to meet the problem of health care efficiency, he said.

"It was a problem that could only be solved with a computer," he recalled.

After receiving a $165,000 grant from the U.S. Public Health Service for the development, implementation and evaluation of a system to fulfill this need, Kolodny took his problem to Sudbury Systems, Inc., which built and implemented RTAS at Framingham Union.

The challenge he brought to the firm in nearby Sudbury was to design a system that would reduce the length of time in which reports could be accessed by other doctors, Kolodny said, because "you can't ask a physician to wait."

Other challenges the system had to meet were instantaneous access from a variety of locations and the capability of allowing a physician to transmit and record the information in the same way as had always been done, he said.

The RTAS "solved all of these problems" by making doctors' taped reports available from any Touch-Tone telephone immediately after the diagnosing physican enters a patient's report, Kolodny said.

The experimental system is concerned only with the reporting of X-ray examinations, although Kolodny indicated it could be used for all hospital laboratory test reporting.

As each request for a lab test is sent from the patient area to the X-ray department, a "flash card" of patient and physician identification information is typed out by an operator working on a Digital Equipment Corp. LA36 Decwriter II terminal, he said.

As the data is typed on the card, it is also recorded by a DEC PDP-11/05 minicomputer – dedicated to RTAS – with 8K bytes of memory and a cassette for off-line loading.

The requisition is turned over to a staff radiologist who inserts the card onto the corner of the patient's X-ray film cartridge for the particular test.

The physician examines the film and enters the patient's identification number on the keyboard of a dictation machine which has an RS-232-type dedicated interface for in-house communications to the host CPU at a transmission rate of 2,000 bit/sec, a spokesman for Sudbury Systems explained.

Each report is recorded on individual tape recorders called Recorpaks with a tape of five or more minutes capacity.

The computer accessing of reports involves a time-division multiplexing scheme that allows for simultaneous recording and retrieval of patient test reports by up to 16 consulting physicians the number of drawers holding the Recorpaks.

The computer recognizes the patient code number the radiologist keyed in and searches through the slide-out drawers to find a Recorpak with an empty tape.

When a consulting physician calls into RTAS, he receives a through-dial interface, then a second-level dial tone, according to the Sudbury Systems spokesman.

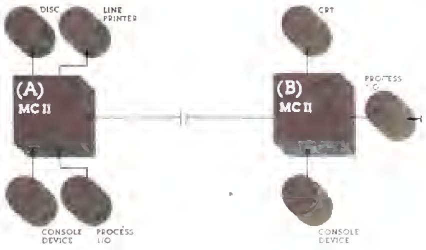
When the patient's code number is entered through the phone's number and symbol pad, the consulting physician can hear the report, he said.

According to an evaluation of RTAS by Kolodny and his colleagues, "a very large proportion (45%) of the reports were accessed within the first five hours of dictation using the RTAS," compared with 3% access within five hours of dictation for a control group.

Case History No. 1
A giant aluminum company chose MODCOMP for this simple two-computer "network."
Computer A is at one of the Company's plants in Pennsylvania. Computer B at a research facility in Tennessee, several hundred miles away. The two computers communicate with each other over ordinary dial-up telephone lines. Using MAXNET, operators at either location have full access to all the resources of both computers. Data, programs, peripheral services can be freely exchanged.

For example, suppose a research engineer at Computer B needs to compile a new program. By a simple terminal request, he can call down language processors from Computer A, compile and edit his program on his own computer, and transmit his listing outputs back to Computer A for printing.

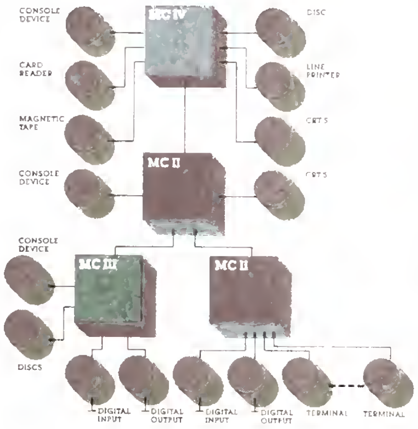
Alternatively, a programmer at Computer A can prepare a program and load it directly down to Computer B. Even though it's the break of day in Tennessee, and the computer is all alone in the office.



This relatively simple system illustrates the flexibility of MAXNET, whether the computers in your network are in adjoining rooms, or a thousand miles apart. It would work just as well if they were on different planets, but nobody's asked us to do that. Yet.

Case History No. 2
This MODCOMP Network is in operation at the central R&D facility of a major oil company. It's a good example of how MAXNET, coupled with across-the-board compatibility of MODCOMP hardware, allows you to start as small as you want to, and grow as big as you need to. Without a heavy initial investment And without costly re-programming as your system expands.

It started, as part of a long-range plan, with the installation over two years ago of a MODCOMP III. Although this model has now been superseded in our line by later models of the MODCOMP II, it is indicative of the long-term compatibility of MODCOMP systems that the III remains today a vital part of this network.



As the system has since evolved a 32-bit MODCOMP IV now acts as host computer. Replacing (at a fraction of the cost) the company's former stand alone IBM 1800, the MODCOMP IV is expected to provide 10 to 25 times the throughput of the big machine, which had long since reached its saturation point.

A MODCOMP II acts as communications controller between the host and satellite computers.

The satellites consist of 16-bit MODCOMP II's performing various data acquisition and control functions for a series of pilot plants. The MODCOMP III handles analytical instrumentation, providing simultaneous service to over 80 instruments of various types.

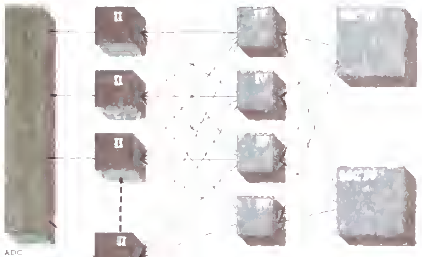
The advantages of this system are, firstly, it's computing power— many times that of the old stand-alone system. It's reliability (the MODCOMP system has had an overall availability of 99.3% of prime time over the past two years) It's expandability, which allows virtually unlimited future growth And last, but far from least, it's economy and ease of operation

Case History No. 3
A NASA prime contractor has installed this highly sophisticated MODCOMP hierarchical network to handle complex stress and fatigue test analyses.

Dual redundant 32-bit MODCOMP IV's at the "host" level communicate with an intermediate level of several smaller 32-bit MODCOMP IV's, screening data received from the satellite computers. A large number of 16-bit MODCOMP II satellites interface directly to the various processes. The entire system has built-in redundancy at each level

Among minicomputer vendors, only MODCOMP has the capability to build a network of this size and complexity, using standard hardware and software products. At a small fraction of the cost for a single stand-alone computer large enough to perform the same multiple tasks. And with far greater efficiency.

It clearly illustrates the unlimited expandability of MAXNET in setting up any kind of network system you need to do your particular job.



For clarity, peripheral devices omitted from this diagram

Note: The MAXNET systems shown here are all resource-sharing networks of the type commonly used in laboratory and industrial measurement and control systems. For dedicated telecommunications applications, MODCOMP offers a separate software system called MAXCOM. For more information, send for our Data Communications brochure.

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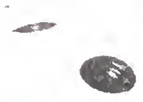

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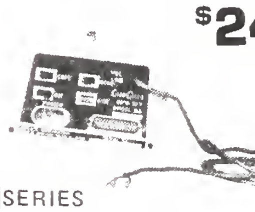

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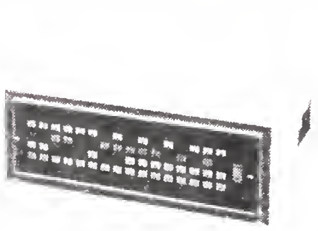

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Also Adds Monitor/Tester

ARC Unveils Data-Patch Control System

ALEXANDRIA, Va. – Atlantic Research Corp. (ARC) has added a communications control system, Data-Patch, to its NCS-100 network control system product line and introduced a programmable communications monitor and interactive tester.

Data-Patch is a modular digital patch system that is said to allow the network controller to access data circuits at the EIA RS-232 or CCITT V.24 interface by 24-conductor patching.

The device can be used to connect modems, multiplexers, terminals and computers where rapid service restoral or diagnostic testing is required, ARC said.

When using the monitor access patch position, test equipment can be inserted without interrupting the circuit, according to the company.

A typical system consists of a rack-mounted assembly equipped with 16 Data-Patch modules and an adapter module; the system can be expanded by adding modules on a per-circuit basis, ARC said.

Each module has three patch positions: computer, modem and monitor. When no patch cords are inserted, the circuit between the modem and computer is "normal through," the company said.

The Intershake II communications monitor/tester reportedly provides the capability to handle all codes and line disciplines at speeds up to 64 kbit/sec with internal clock and up to 256 kbit/sec with external clock.

In addition, the device provides for all aspects of half- and full-duplex testing, including display and block check character calculation for transmit and receive data of binary synchronous, IBM Synchronous Data Link Control and other protocols, ARC said.

Routines may be structured manually from a library of 100 programmable test steps including jump and branch and loop instructions for software-like test programming, it added.

Intershake II offers a choice of one or two synchronous characters and an auxiliary parallel interface for autodialers, data acquisition printers, CRT displays, bulk storage cassettes and keyboards, according to the firm.

Simultaneous display of the full-duplex data stream is provided with the CRT option, ARC noted.

The Intershake II test step instructions are implemented from a permanent read-only memory of eight stored tests of up to 128 steps each; from a nonvolatile memory manually programmable by the user; or with manual edit of both types of memories to permit test variation, the company said.

A standard Intershake II costs $9,490, with delivery in 90 days; the Data-Patch system costs $1,200, the company said from 5390 Cherokee Ave., Alexandria, Va. 22314.

TDX System Reduces Monthly Phone Bills

McLEAN, Va. – TDX Systems, Inc. has introduced a management control system which it said can reduce by up to 40% the monthly phone bills of large-scale users of long-distance telephone and Wats lines.

The computerized Telecommunications Management and Control System (TMCS) is primarily oriented toward voice communications because of normal waiting periods on voice communications lines, according to a company spokesman. To accomplish data communications traffic, extensive software modifications might be necessary, he added.

TMCS is based on distributed networks of Intel 8080 microprocessor-driven circuit switches at user sites. The switches are connected through a data circuit to two 1M-byte Interdata 7/32 CPUs located at TDX headquarters here.

TMCS chooses the least-cost facility to accomplish a call and tracks all outgoing long-distance calls, including the person who placed the call, TDX said.

The system is not oriented toward terminal applications, but is transparent to terminal operations, the spokesman added.

The system is expandable in modules of eight ports; for an eight-port configuration, the cost is $30,000 or $1,000/mo including maintenance, the spokesman said from 7670 Old Springhouse Road, McLean, Va. 22101.

ISI Has Addressable Modem For TDM Communications

ANN ARBOR, Mich. – Interactive Systems, Inc. (ISI) has introduced a single-address intelligent modem for full-duplex coaxial cable digital communications systems using time-division multiplexing (TDM) techniques.

The Model 810, an 8-bit parallel, CMOS logic data modem, was designed to interface a single parallel digital device such as a CRT, line printer or teletypewriter to an ISI coaxial cable communications system at transmission rates up to 48 kbit/sec in full-duplex mode.

The model 810 is priced at $600, an ISI spokesman said from 3980 Varsity Drive, Ann Arbor, Mich. 48104.

Interface Works With PDP-8s

WELLESLEY HILLS, Mass. – Standard Information Systems, Inc. has introduced an asynchronous communications line interface for Digital Equipment Corp. PDP-8 minicomputers.

The asynchronous line interface (ALI) features programmable multiple speed capacity for up to 64 lines and is a cost-effective alternative for users of more than eight lines, the company said.

The user can select eight transmission speeds from a total of 15 speeds of 50- to 9,600 bit/sec. These eight speeds operate under an automatic transmission speed recognition capability which is wired in under program control, a spokesman said.

In addition to line speed, character length, internal loopback, echo control and a transmission break generation/detector are standard features which also operate under the program control of the PDP-8, he said.

The ALI is compatible with either the PDP-8 omnibus or the older external bus, according to the company.

The price for a basic eight-line interface is $5,800 without modem control and includes spare parts, a power supply, interface cards and repair service for two years, the spokesman said.

The price for additional lines in increments of eight is $1,200; there is a cost of $1,100/card for modem control in 16-line increments, the spokesman said from 36 Washington St., Wellesley Hills, Mass. 02181.

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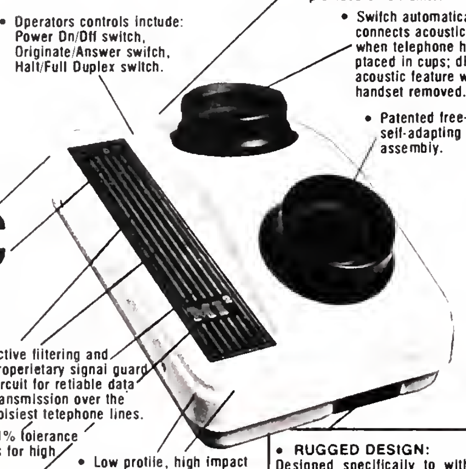

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Many Approaches Possible

User Selecting Gear Faces Myriad of Alternatives

By Toni Wiseman
Of the CW Staff

DALLAS – Once the decision to acquire a computer has been made, the question becomes "Which specific computer system is needed?" according to Joe Auer, president of International Computer Negotiations.

"Notwithstanding an accurate assessment of processing requirements and a determination of which computer system would fulfill these requirements, a buyer is confronted with an array of mainframe vendors, peripheral manufacturers, brokers, other users, leasing companies, etc., which he can utilize to acquire a total system," Auer said.

Auer was addressing a Computer Caravan workshop here on the subject of equipment and financing alternatives.

In assembling a system "by device," the possible acquisition combinations become factorial by an amount equal to the number of devices and potential supplier sources involved, he said.

Further compounding the acquisition process is the acquisition method which runs the gamut from a rental contract to a purchase through the possibilities of third-party lease, installment purchases, extended leases, rentals with purchase options, etc., he said.

Generally, new components have some advantages since they allow the user to have a state-of-the-art system, take advantage of investment tax credit in certain acquisition methods and rest a little easier with regard to warranties, maintenance contracts and such.

If a company does not necessarily need the investment tax credit on new equipment, it might still want to look at acquiring new gear through a leveraged lease. This allows the leasing people to pass on the tax advantages to their investors, which in turn ends up in a net savings to the user company through a lower lease rate, Auer suggested.

"If the equipment is a new line of gear, do not be afraid to ask for all types of concessions and considerations for being the first in your area to install that particular piece of gear," he said.

"You can get considerations for allowing your company's name to be used in vendor advertising and allowing the computer itself to be used for benchmarks, demonstrations and education."

Depreciated Gear

Depreciated gear, on the other hand, can also offer financial opportunities in both acquisition and ongoing utilization costs, Auer noted. For instance, in some cases a company can buy more computing power for its specific need than through newer state-of-the-art offerings.

"In addition, you don't have to reinvent the wheel on operating and application software which has financial and implementation timing advantages," he said.

In terms of pricing depreciated gear, traditionally a vendor will take a look at the price at which each component of the configuration is listed on their books and compute an average book value, he said.

The internal gross margin requirements will be applied to it, along with a "pad," and this final price can be anywhere from a very low percentage of list up to 90% of list, Auer said.

Don't always consider a manufacturer the only source for depreciated gear, Auer said. There are computer brokers, third-party leasing companies and other users who are getting rid of the type of gear you may want.

One approach to depreciated gear is to mix it with state-of-the-art equipment, since some areas, such as peripherals, are progressing faster than others.

Think in terms of mixing your configuration with depreciated gear for some components that meet your needs and renting components that may be headed toward a change in the state of the art. If you anticipate a change in your needs, you might want to go ahead and rent new gear in those areas," he said.

Acquisition Methods

The vendor rental contract offers absolute maximum flexibility to anybody acquiring a computer. This is in part because of the relative ease of upgrading and downgrading the system into the user's changing requirements.

Also, the user has the ability to take advantage of state-of-the-art offerings made by the vendor at future dates because normally a vendor will allow a user to go to the vendor's new gear for just a net difference in monthly rental if it's an upgrade.

Other advantages of vendor rental contracts could include shorter term obligation. Some users feel it is beneficial to make monthly payments directly to the manufacturer who then has a vested interest in updating the computer at the user site since he (the vendor) really owns the equipment.

Auer also mentioned disadvantages of vendor rental contracts. They are probably the highest monthly cost way to

(Continued on Page 44)

Centronics Printer Line Includes Teleprinter With 300 Bit/Sec Speed, 60 Char./Sec Units

HUDSON, N.H. – Centronics Data Computer Corp. has introduced a line of printers that includes a 300 bit/sec teleprinter and two 60 char./sec serial impact printers.

The 761 teleprinter is available in receive-only (RO) and keyboard send/receive (KSR) versions and is designed for use as a CPU console or remote terminal.

Available with serial or parallel microprocessor interfaces, the 761 can print and transmit incrementally when data is entered from the keyboard. It operates in a bidirectional printing mode when receiving data in a remote application.

The unit prints 7 by 7 dot matrix character at 80 char./line and is available with RS-232, CCITT or current loop interfaces.

Options include 132 char./line, higher transmission speeds up to 9,600 bit/sec and a buffer of up to 2,048 characters.

The Model 700 is a 60 char./sec unidirectional printer with a throughput of 13- to 90 line/min. It prints 80 columns at 10 char./in. using a 5 by 7 dot matrix character.

The Model 700 is designed for applications that require "low throughput, hardcopy output," such as CRT printers, off-line selective printing for small business systems, etc., the firm said.

The Model 701 is a 60 char./sec bidirectional printer with a throughput of 25- to 120 line/min. The unit incorporates LSI electronics "on one circuit card."

The Model 761 KSR costs $2,025 while the RO version costs $1,895 with first deliveries scheduled for the fourth quarter.

The Model 700 costs $1,520 with first delivery in the third quarter while the Model 701 costs $1,815 with first shipments in the third quarter.

The firm showed "preproduction models," but said delivery schedules would be met. Lease terms and OEM discounts are available. Centronics is on Route 111, Hudson, N.H. 03051.

Macro Products Adds Chain-Type Printer

LONG BEACH, Calif. – Macro Products Corp. has added a fourth chain-type printer to its line.

The M-550 is reportedly plug-compatible with the Honeywell 2000, 6000 and Series 60 mainframes as well as IBM 360/370 and Univac Series 70 CPUs.

Characters move horizontally on the firm's Charaband chain and are printed at a rate of 1,500 line/min.

The M-550's $42,500 price includes installation, the firm said from 3110 E. Willow St., Long Beach, Calif. 90806.

Azurdata Introduces Terminals

RICHLAND, Wash. Azurdata, Inc. has introduced two portable data entry and collection systems designed for retail applications.

The Infopac models I and I-1/2 terminals feature 4K-character standard memory capacity, Nicard battery pack, keyboard and LED display, a company spokesman said.

The Infopac Model I-1/2 is said to weigh three pounds and offer up to 64K characters of memory.

Information can be entered into the Infopac terminals from the keyboard or with an optical character recognition wand-type reader passed over the standard bar codes, the company said.

Features include variable record length, error prevention controls with audible alarms and fast-dump capability with transmission up to 2K char./sec, it added.

A choice of various transmitters and transmission codes and rates are available.

The cost of a standard Infopac I terminal with a companion transmitter is $1,350, Azurdata said from 1305 Mansfield Ave., Richland, Wash. 99352.

Kodak Announces Products For Document Microfilming

ROCHESTER, N.Y. – Several products for high-speed document microfilming have been announced by Eastman Kodak Co.

Recordak camera sorter microfilm SO-354 is available in 16mm format and can be supplied in various lengths and configurations to fit high-speed document microfilmers.

Kodak Scanner-Pack M cartridge and B cartridge are disposable packages offering daylight loading of microfilm.

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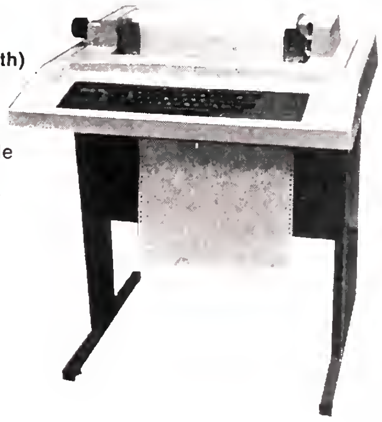

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Models Predict Salinity

DP Helps U.S. Desalt River Water

DENVER – A Control Data Corp. Cyber 74 computer here at the Bureau of Reclamation's Engineering and Research Center has been put to work easing international tensions between the U.S. and Mexico.

The system is being used to predict, monitor and help control salinity levels of the lower Colorado River.

Excessive salt content in the water reaching Mexico has been the cause of disputes between the two countries for more than a decade.

Salinity increases in the Colorado River have been recorded since the early 1900s. Even before the problem became acute, salinity of the lower Colorado had been steadily increasing.

By 1962, saline concentration was nearly double what it had been only 10 years earlier. By 1970, salt content at the southern end of the Wellton-Mohawk irrigation canal which drains into the Colorado above Mexico's Morelos Dam sometimes reached 3,000 part/million, a level unacceptable for most agricultural purposes.

In August 1973, Mexico and the U.S. signed an agreement to effectively control the salinity of the million and a half acre-feet of water that the U.S. is obligated to deliver to Mexico from the Colorado River under a 1944 treaty.

Under the 1973 agreement, water reaching Mexico must have "an annual average salinity of no more than 115 part/million ± 30 part/million over the annual average salinity of the Colorado River waters which arrive at Imperial Dam."

The requirement became effective with the signing of the Colorado River Basin Salinity Control Act in 1974 (Public Law 93-320). That act authorized the construction of the works necessary to achieve the agreed differential in salinity. As a permanent solution, the method most acceptable to the U.S. for maintaining the differential salinity level of 115 milligrams per liter is to modify the Wellton-Mohawk drainage waters.

This will involve irrigated acreage limitations, improved irrigation efficiencies, further regulation of Gila River floodflows and construction of a large-scale desalting complex to treat the saline drainage waters.

The job of design, construction, operation and maintenance of the world's largest desalting plant has been assigned to the Bureau of Reclamation. The Cyber 74 is used to assist in comprehensive modeling studies to predict future salinity conditions in the Colorado River, the effects of improved irrigation efficiencies on drain water supplied to the desalting plant and future flow conditions in the Colorado River. During plant operation, the computer will provide water quality simulation of the river to help assure that the agreed-upon salinity differential is maintained.

Meanwhile, in another related study, the Bureau of Reclamation is looking into the feasibility of tapping the huge water reservoirs and geothermal power and sources underlying much of California's Imperial Valley as a means of augmenting and further improving water quality in the Colorado River.

Water in this tremendous subterranean reservoir, while often too salty in its natural state as it flows freely from the ground, can be desalted by using heat in the fluid itself. The heat energy can be used to generate electrical power, power desalting plants and return the fresh, usable water to the river.

Computer programs are utilized to determine the size of the reservoir and its expected useful life. These programs are derived from information such as changes in yield of the wells and various geophysical data.

While only on a pilot test scale, the process offers a supplemental means to make additional good-quality water available to users of the lower Colorado River water.

System Monitors Utility's Generators

LOMBARD, Ill. – A computerized dispatch system has been credited with expanding the monitoring and security-analysis capabilities and improving control of electrical generating units for the Commonwealth Edison Co. here.

The system, in use for three years of testing and on-line operation, is installed at Commonwealth Edison's System Power Supply Office.

With the system, the utility achieves:

- Control of generation, minimizing operating swings, matching loads and generation and meeting interconnection requirements.
- Evaluation of planned transmission-line outages, resulting in reduction of work schedules at times of premium labor rates.
- Restoration of line loadings and bus voltages following unplanned outages.
- Acceptance by dispatchers who already have suggested assigning new tasks for the system.

The system has monitoring capabilities which provide for telemetering and information display from more than 70 remote locations and interconnecting tie lines.

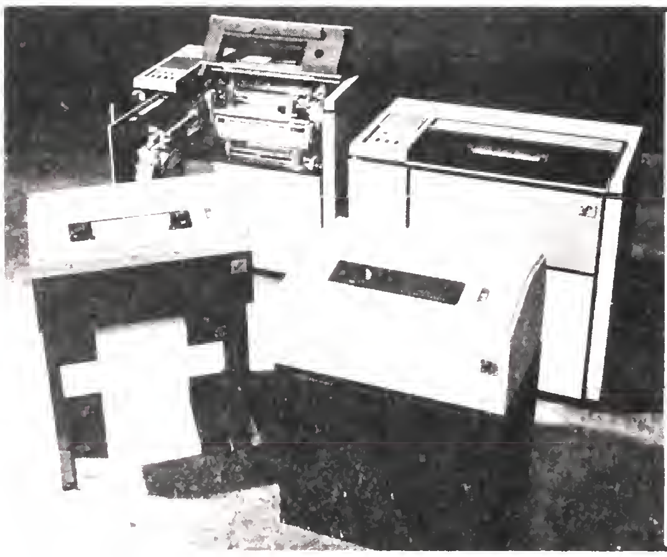
It controls 36 electrical generating units ranging in size up to 1100 MW. Technical teams from Commonwealth Edison and Leeds & Northrup (L&N) designed the system over a 3-1/2-year period.

Real-time status processors and an on-line load-flow program provide an accurate analysis of the entire network operation.

Two identical digital computers, each with 48K of core memory, handle all system-control functions. In the dual LN5500 system from Leeds & Northrup, one machine, designated "master," performs all system functions while the other computer, designated "reserve," monitors the master's operations and immediately takes over in case of failure of the master.

If both computers fail, a second-level control backup is provided through a simplified L&N analog broadcast control as further insurance that load-frequency control will be maintained.

Conitel 2100 digital data-acquisition and control equipment serves as telemeter for the control system. Nearly 1,000 analog quantities – megawatts, megavars, kilovolts, weather data – and the status of over 500 circuit breakers are telemetered from the remote stations throughout the Commonwealth Edison system and at neighboring interconnection stations.



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The M-260 printer (front left) delivers 600 lines per minute. The M-290 (front right), 900 LPM. Macro's newest, chain-type printer (back left) gives you 1500 LPM—36% better than IBM's 1403 can do. And the M-470—workhorse of the Macro line—prints 1800 LPM.

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Learn how a new Macro Printer—delivered in 90 days—will make your Honeywell or other maxi computer system work more for less. Write now to Chas. W. Bozarth, Macro Products Corporation, 3110 E. Willow St., Long Beach, CA, 90806, (213) 595-6337.

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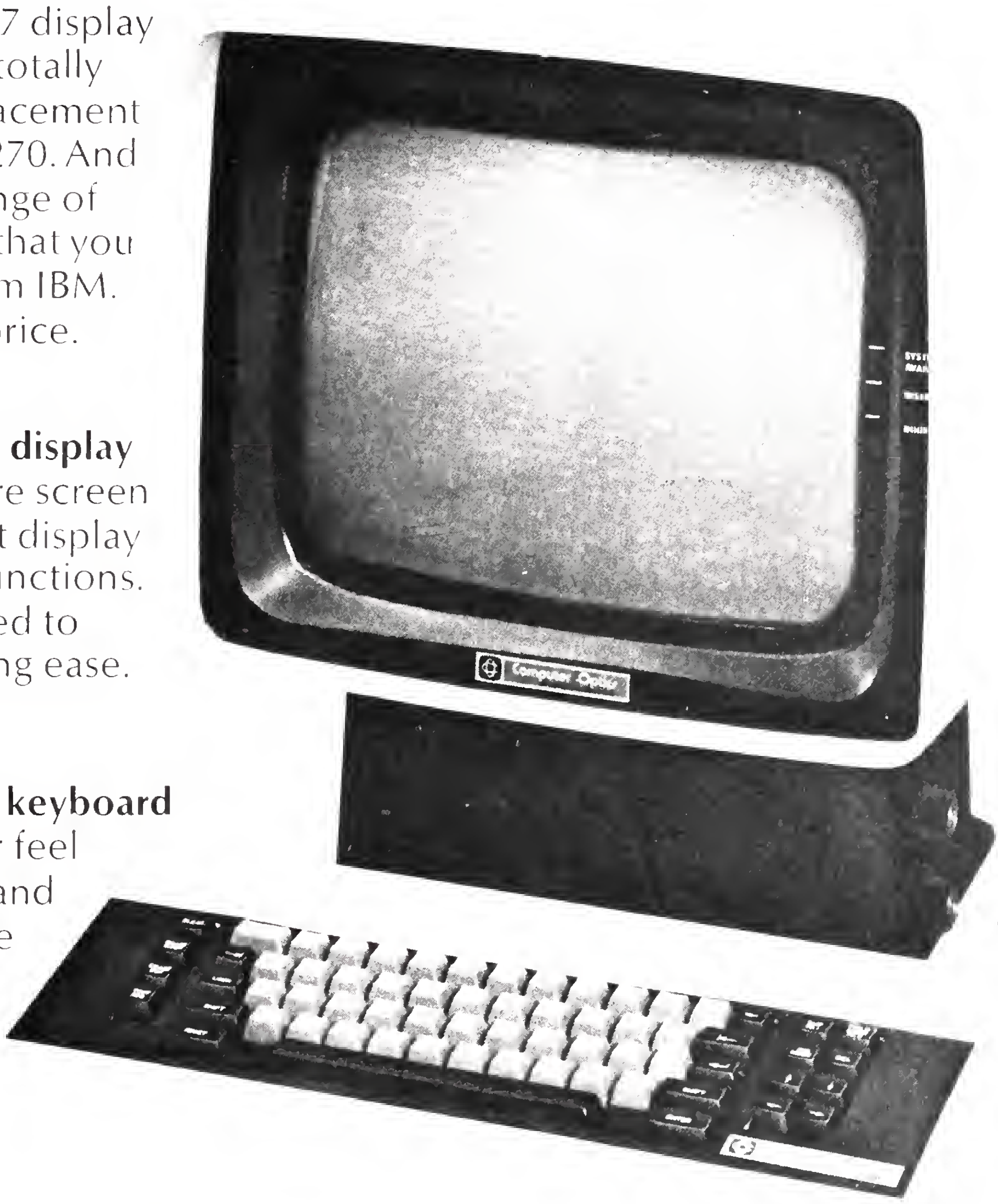

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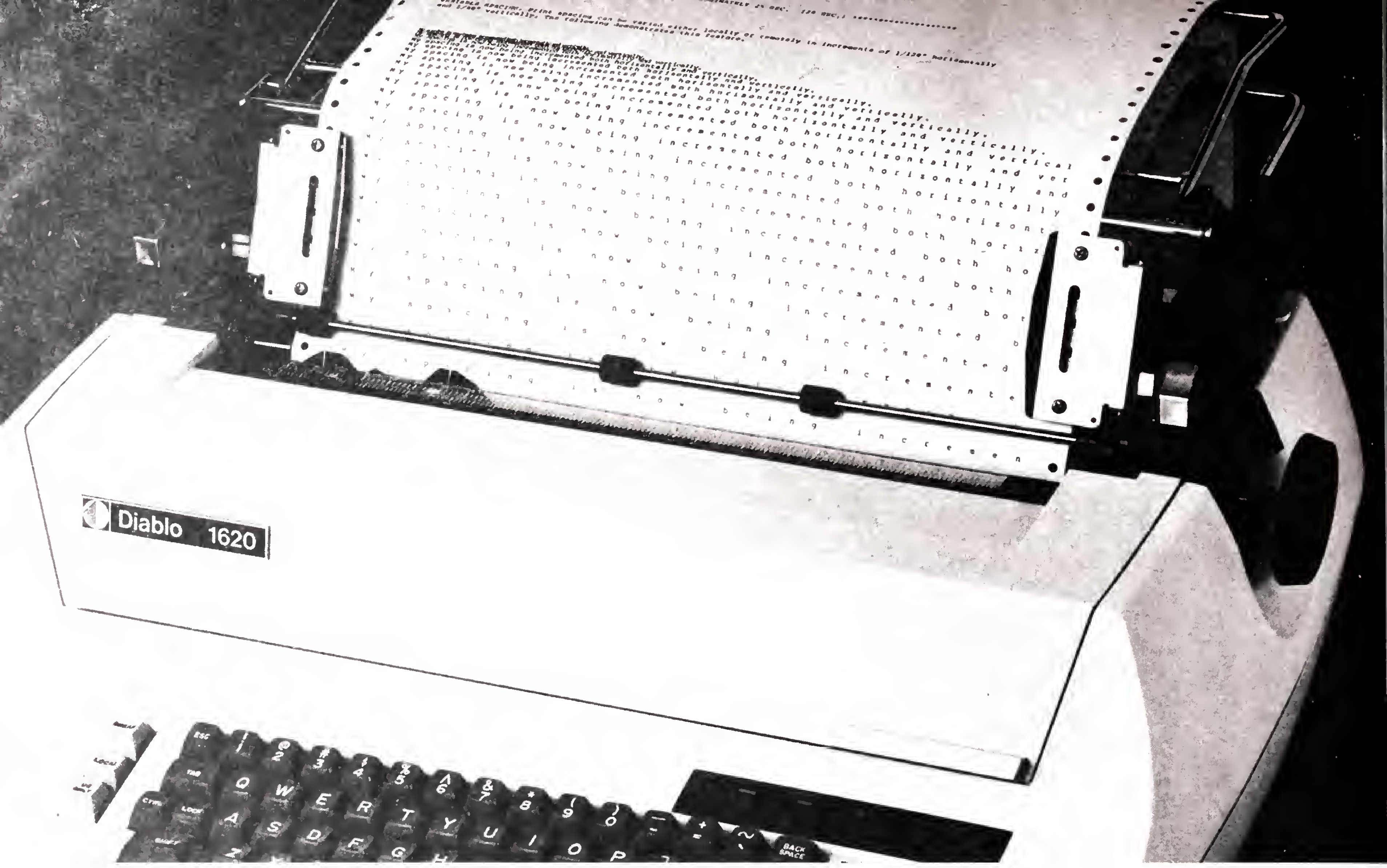

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Diablo's new HyTerm 1620 introduces graphics versatility, printing fidelity, speed and reliability which other terminals simply cannot match. Its print mechanism is the advanced Diablo HyType II daisy wheel printer . . . and its output is so superb that the type has textbook quality. Both vertical and horizontal resolution give the 1620 graphic capabilities that are practically unlimited.

Printing speed is 45 cps and even faster when the 1620's backward printing capability is used. A microprocessor and few moving parts mean low cost, trouble-free operation over longer periods. When maintenance is needed, it is available nationwide through Sorbus.

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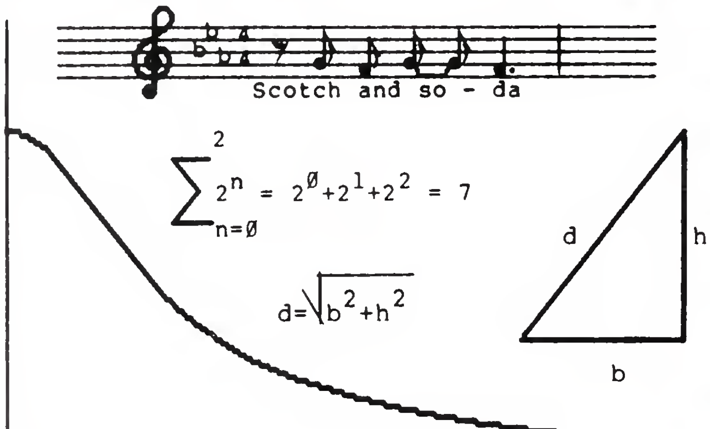


Cost Analysis Worksheet Included

Primer Teaches Tape Management Program Setup

BURLINGTON, Mass. – Some tape-writing problems can be a great expense to an organization; other tape-read failures can "result in hours of catastrophic rerun time lost to a single tape defect."

These are some of the justifications for "Why It Is Cost-Effective to Establish and Implement a Tape Measurement Program" – a four-page primer and do-it-yourself cost analysis worksheet from Computer-Link Corp. here.

The primer includes information about tape errors and costs of tape failure and how both to establish a tape management program and select equipment best suited to implement the program.

Part of the primer is a worksheet designed to evaluate annual costs for tape and information necessary to justify a tape cleaning and evaluation program, Computer-Link said.

Tape errors, according to the booklet, occur when dirt and wear particles caused by normal use build up enough to cause signal dropouts.

Successful Program

A successful tape management program includes capabilities for tape cleaning, evaluation, repair or replacement and tape scheduling, it said.

The identification of actual costs of tape failures involves determining the number of "dead tapes" in a tape library, the unnecessary purchase of new tapes to compensate for the loss of the unusable ones and the cost of read-error failures causing lost hours in processing time, the primer said.

In addition to these things, write errors, resulting from each tape written when a parity failure occurs, must be taken into consideration, it noted.

The booklet includes a chart, based on computer system rental costs, which determines the cost of write-check errors when the computer is in a wait state while the tape unit attempts to write a record on a defined area of tape.

By identifying the areas that produce large money losses caused by tape problems, the items to be controlled can be pinpointed, it stated.

"A small expenditure in equipment and scheduling can establish a tape management program that provides a smoother running, more efficient operation with up to 85% of the lost dollars recovered," according to the primer.

The first step is to start with tapes which cause the biggest problems, it said.

Next, schedule all tapes in the libarary for regular maintenance by using a tape reliability indicator label. Then establish criteria for rejecting, retaining or repairing each tape based on its present performance, it advised.

The primer can be obtained from Computer-Link at 14 Cambridge St., Burlington, Mass. 01803.

CEI Offers IBM Users Technical Training

WASHINGTON, D.C. – IBM-oriented technical training services and motivational development sessions for operations personnel, developed by Computer Education International, Inc. (CEI), can be tailored to a client's DP and organizational needs and presented at the client's site, according to a CEI spokesman.

The technical training is shaped to the user's existing or planned hardware/software configuration and supports "all conventional operations functions," the vendor said.

While the technical training focuses on extending the students' knowledge of systems, flows, functions and processes – to improve their ability to perform on the job – the organizational training is keyed to encouraging self-development, improving attitudes toward the work to be done and strengthening commitment to the organization, he said.

Typical charges range from $60- to $90/student day, including all tailoring, instructional services, materials and CEI staff travel expenses. Clients usually supply classroom facilities and support plus machine time if applicable, the spokesman added.

CEI is at Suite 222, 2233 Wisconsin Ave. N.W., Washington, D.C. 20007.

Scan-Data Extends OCR Product Line

NORRISTOWN, Pa. – Two extensions to Scan-Data Corp.'s optical character recognition (OCR) product line include a system capable of reading intermixed alphanumeric handprint direct from source documents and the Area Scan feature, which increases the flexibility of forms reading by the company's OCR systems, Scan-Data said.

The OCR system which reads alphanumeric handprint "enables handprint to be used in applications where mixed letters, numbers and symbols are required, such as for model part data, street addresses and motor vehicle information," he added.

The Area Scan feature is an extension of the company's continuous-feed option [CW, Sept. 17].

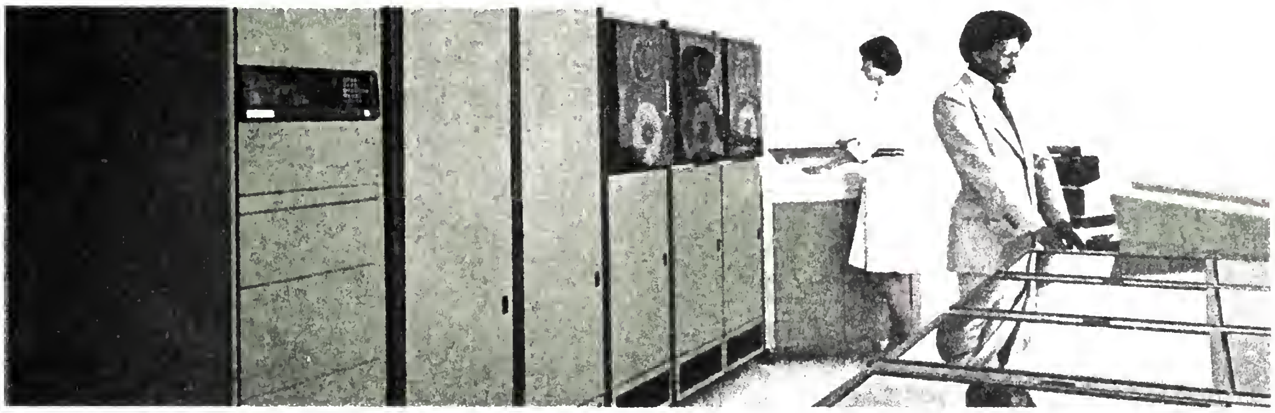
Area Scan enables the system to read larger sections of a form without paper movement, providing improved flexibility in field-scanning sequence, Scan-Data claimed.

"In addition to helping to increase document throughput, the capabilities of Area Scan make our system more compatible with forms design for IBM 1287 and 1288 OCR systems, facilitating conversion to Scan-Data equipment," the company spokesman said.

A typical Scan-Data 2250/1 OCR system with alphanumeric handprint recognition capability costs between $8,000/mo and $10,000/mo on a two-year lease. A system with the continuous-feed option, which automatically includes Area Scan, would start at a price of $5,000/mo on a three-year lease.

Scan-Data is at 800 East Main St., Norristown, Pa. 19401.

INTERDATA 8/32
MEGAMINI LIFE SUPPORT



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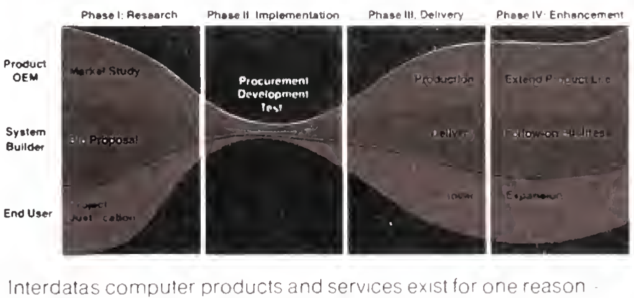
On-time Delivery. Interdata guarantees on-time delivery of your Megamini. In fact, we've already shipped hundreds of 32-bit computers from production that are completely operational.

Hardware Back-up. Interdata hardware means 32 registers, each 32 bits wide. Fast single- and double-precision arithmetic. Optional, writable control store. And big computer peripherals. It also means that we support you long after your system is operational.



Interdatas computer products and services exist for one reason – to satisfy our customers. The Product OEM, the System Builder and the End User. Each of these computer buyers has a Computer Life Cycle with four specific Phases – Research, Implementation, Delivery and Enhancement. Interdata responds to customer needs during each Phase with Computer Life Support.

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User Looking for Hardware Has Options

(Continued from Page 35)

acquire a computer; there are no meaningful tax advantages; and the user is subject to indiscriminate price increases by the vendor.

The primary advantage of an outright purchase, on the other hand, is that it is probably the lowest total-cost way to acquire a computer, Auer said, and the user can take advantage of all the tax advantages such as full investment credit and depreciation.

On the minus side, outright purchase requires a high initial outlay of capital and a long-term commitment to a particular vendor and his operating system. In addition the user may be faced with obsolescence, he said.

In between rental contracts and outright purchase, there are any number of financing vehicles, and each has its advantages and disadvantages, Auer said, mentioning third-party lease, installment purchase, extended lease and purchase options as a few of the possibilities.

Specific advantages and disadvantages of third-party lease are a blend of various pros and cons of an outright purchase or a standard rental agreement, he said.

Some general advantages unique to third-party leasing are that the leveraging aspects can pass on financial savings to the lessee; the lease can be structured to tailor payments with regard to the lessee's cash flow requirements; and the user need not strain existing credit.

Most users should undertake a purchase vs. lease vs. rental analysis on different components of the system, Auer said.

Some users may find it advantageous to purchase selected components outright while placing others on a third-party lease and renting the remainder, he noted.

Once the user has determined to pursue a transaction and has satisfactorily evaluated the acquisition method, he must tailor the transaction to its specific data processing needs and management goals.

"To be effective, this requires that the user develop an interdisciplinary negotiating team, comprised of the firm's data processing manager, legal counsel, comptroller or other financial expert and a member of top management.

"To the extent that such assistance is available, the user may also wish to retain a computer negotiating or consulting firm to contribute to the entire acquisition process," Auer said.

Auer left the attendees with a final caution: "If it's not written into the contract or lease agreement, it's not part of the deal."

Remex Floppy Bows

SANTA ANA, Calif. – A flexible disk drive, the RFD 1000, has been announced by the Remex Division of Ex-Cell-O Corp. featuring double-density capability.

In double density, the RFD 1000 will provide up to 6.4M bits of data storage, the vendor said. Transfer rate is 500 kbit/sec. In addition, the RFD 1000 can be employed for single-density (up to 3.2M bits) data storage with a transfer rate of 250 kbit/sec.

Both format and media are user-selectable. When IBM compatibility is desired, the RFD 1000 will read and write IBM 3740-formatted diskettes, providing 1.9M bits of data on one side of standard media, Remex said. The unit will also accept 32-hole hard-sectored diskettes without alteration to the drive, increasing single-density data capacity to 3.2M bits.

The price is $700 per single unit.

OEM Memory Module Announced by CDC

PALO ALTO, Calif. – The CDC 94550 memory module from Control Data Corp. was introduced at the California Computer Show.

It is the second in a family of semiconductor memory modules developed by the firm for use in the OEM market for small computer systems and communications.

The 94550 module is a dynamic random-access memory that uses 4,096-bit metal oxide semiconductor storage devices to provide a high-density array card of around 1.3 million bits, the firm said. The system is configured to utilize 5-1/4 inches of a standard 19-inch rack mount, it added.

The basic 64K by 20-bit module is used to expand the system to 1,024K bytes with a single timing and control card, CDC claimed.

The memory system has a 450-nsec cycle time and a 325-nsec access time and offers full read, write and partial-write cycles, CDC continued.

Prices and delivery schedules for the memory module have not yet been determined. For further information contact R.C. Urban at CDC, 3857 Louisiana Ave., St. Louis Park, Minn. 55426.

Univac Buffered Keypunch Gets Mark-Read Feature

BLUE BELL, Pa. – Univac is offering a mark-read feature on its Model 1710 Verifying Interpreting Punch (VIP).

This is the first time such a capability has been available on a buffered keypunch, according to the firm.

Either 40 or 80 columns of marked data can be accommodated on an 80-column card. Up to 12 vertical marks per card column can be recorded, Univac said.

Throughput in the mark-read mode is between 40- and 60 card/min, it added.

More Costly Previously

Previously a mark-read function was provided only on more costly units, which also offer character reading, or on separate units which operate on-line or are interfaced to a card punch, paper tape or magnetic tape unit, the firm said.

Rental of the mark-read feature is $110/mo including maintenance. Deliveries are scheduled for August; the firm can be reached through P.O. Box 500, Blue Bell, Pa. 19422.

Context Releases Literature On Series 100 Page Readers

BURLINGTON, Mass. – Context Corp. has announced the new literature on its Series 100 family of optical page readers.

The package outlines the features, specifications and benefits of three models: 101, 102 and 103, the firm said from 4 Ray Ave., Burlington, Mass. 01803.

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TI's TICOL* II application language delivers the power of a microcomputer to data entry operators. Formats are easily programmed directly on the terminal. No other hardware is required to match your software with your needs.

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The Model 742 captures data independently of the host computer. Stored on cassettes, data can be polled at night while your terminals are unattended. For example, TI's Model 700 TPS Terminal Polling System with mag tape output is available.

This affordable intelligence includes cassette drives and instant hard copy with printer off/on under program control, for fast, efficient data entry keying. Optional forms printer interface and built-in modems are available.

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For more information, contact your nearest TI office. Or write Texas Instruments Incorporated, P. O. Box 1444, M/S 784, Houston, Texas 77001. Or call (713) 494-5115, extension 2126.

Data Entry Intelligent Features:

- Data keyed to built-in cassette storage after editing for batch transmission.
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- Printer may be off during data entry. Software programs control on/off function for error alert and field prompts.
- Cost-cutting editing power for double key verification of critical fields, checks for length and type of characters, and range checks.
- Pre-processing power for numeric computation and automatic input of fixed field data.

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Firm's Order Entry Problems Solved by Installing Terminals

MILWAUKEE, Wis. – Globe-Union, Inc., a manufacturer of batteries and electronic components, has solved nagging problems with input errors in its order entry process in each of 11 plants across the U.S. by installing dual Diskette 1100 terminals made by Datapoint Corp.

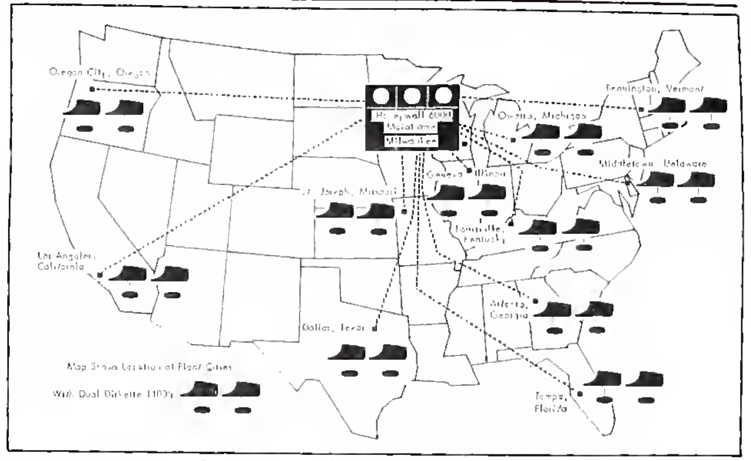
At the same time it's been able to register substantial improvements in employee productivity.

The Diskette 1100 units constitute a direct communications link between each of the plants and a Honeywell 6000 series computer located here.

The units in the plants are used to process orders received for the many varieties and categories of batteries made by Globe-Union, which produces the "Die Hard" battery for Sears, Roebuck and Co. and private-label batteries for users such as Gulf Oil, Sun Oil, Caterpillar, NAPA and major auto manufacturers.

Globe-Union's private-label customers send their purchase orders for additional batteries directly to the local plant nearest them, usually by mail. These incoming orders are then processed by operators using the system who enter data on the customer, his billing address, the part number of batteries ordered and the quantity.

Automatic error checks built into the unit signal the operator in the event an invalid battery number or an erroneous customer number is entered. Once in the system, the purchase order data triggers a fulfillment process in the local plant while the home office computer is automatically alerted that an order has been received. When shipment has been made, the home office computer generates the necessary customer invoice.



Globe-Union Dispersed Processing Network

Globe-Union manufactures some 3,000 different kinds of batteries. Many of these batteries are maintained as stock items in the local plants, and orders are normally filled from this inventory.

Previously, the company used a teletypewriter network for communications from the local plant to the home office for order entry, with operators keying information directly into the network from purchase orders. Errors on battery part numbers contained on the purchase order and/or undetected errors made independently by the operator frequently entered the system and would be tracked down later on by employees in the home office at considerable trouble and expense.

"With the Diskette units, the visual scan they permit and the automatic error checks and verifiers built into the system, we've been able to reduce the overall incidence of input error from order entry to a minimum," John Jansky, manager of DP systems for Globe-Union, said.

"Even though many of our plants are located in relatively remote locations, the Datapoint field engineering service has been very good about providing service on those few occasions when we've had system troubles at our field sites."

For the Sears battery business, the approach is slightly different. Battery sales at each of the Sears outlets which handle Globe-Union-manufactured batteries (almost 1,000 outlets) report their sales on a weekly (or even more frequent) basis to Sears headquarters in Chicago.

This sales information is then teletyped to Globe-Union's computer operation in Milwaukee which is programmed to ship additional batteries of various types and categories to each of these Sears outlets when stocks fall below predetermined levels and to issue production orders, when required, to each of the company's plants which serve the particular Sears outlets with battery requirements. This information is transmitted to the plants via the Diskette units which maintain in their files information on local battery stocks. With this order information in hand, the rest of the administrative and invoicing process is similar to the regular private label battery business.

The advantages of this centralized approach are several: employee input errors are reduced to a minimum and data communications facilities allow much more rapid expediting of orders, compared with the mail/teletypewriter approach used in the past.

"Our dispersed processing network and the Diskette 1100s have added several new dimensions to our overall computing capability," Jansky said. "It also provides the basis for many additional applications we may want to implement in the future. I anticipate a real growth in the whole concept of supplemental on-site processing to relieve the workload on the central processor."

Responsibility for programming Globe-Union's application is shouldered by a home office group under Jansky's direction. "We use Databus, Datashare, Dataform and Assembly languages," he noted, "and find each of them useful for specialized assignments."

Entry-Level Modcomp II in Trio of Firm's Offerings

By Esther Surden
Of the CW Staff

NEW YORK – Modular Computer Systems, Inc. (Modcomp) has announced enhancements to its minicomputer line which include an entry-level semiconductor memory version of its Modcomp II mini for networking applications.

Also introduced here was Memory Plus, a bulk core memory storage system said to fill the gap between high-performance peripheral devices and low-end main memory, and an updated version of the firm's Fortran IV language processor.

The Modcomp II/2 was designed as a satellite processor for network users who need less power than the firm's standard Modcomp II mini provides, a spokesman said.

The system can also be used as a free-standing computer in data acquisition types of applications or as a small general-purpose mini, a spokesman said.

The II/2 uses the same software as previous Modcomp II models; all standard Modcomp peripherals can be attached to it, he added.

A basic system II/2 contains 48K bytes of semiconductor memory with a 600 nsec cycle time. Word parity is standard, Modcomp said.

The II/2 processor, Direct Memory Processor (DMP), I/O bus and all memory are contained on one board, the spokesman said.

The processor has remote fill capability so programs can be loaded from a remote processor and activiated without operator intervention, he noted.

Only eight interrupts of the standard 16 found on other Modcomp models have been implemented on the II/2, Modcomp said. The standard Modcomp instruction set has been implemented, with the exception of five instructions deemed unnecessary, the firm said.

Power safe restart, floating-point hardware and multiprocessor communications hardware have also been eliminated, the spokesman added.

In addition, the DMP has been implemented in a different fashion, interrupting the CPU on a word basis. The DMP has also been integrated into the CPU, he said.

Modcomp II/2 shown here was designed for networking applications.

There are three Modcomp II versions. The II/2-1 with 8K of memory costs $3,995; the II/2-2 with 16K words of memory costs $5,095; and the II/2 with 24K words of memory costs $6,195, the spokesman said.

Memory Plus, also introduced here, is a bulk core storage device that can be used as an alternative to fixed-head disks, as a shared memory for multiple processor systems, as an auxiliary memory for storing the operating system or, with user-designed controllers, as a high-speed buffer for transmitting external input data to main memory, Modcomp said.

A minimum Memory Plus configuration including one controller, one device file and one 256K-byte core module costs $20,000.

The unit can accommodate up to two single- or dual-access files and can be expanded in 256K-byte increments to a maximum of 4M bytes.

As many as four Memory Plus devices can be attached to a single Modcomp II or Modcomp IV, allowing a maximum of 16M bytes of intermediate storage capa-

(Continued on Page 47)

Selecting a Mini —Part 5

Checking With Other Users a Final Must

By Robert E. Berkman
Special to Computerworld

There are a few points that should be considered in making a final selection that have not already been covered. These considerations should be applied after the bids have been evaluated on the criteria previously discussed.

It is important to check the references given by the vendors. Most companies should be able to give references for projects similar in nature to the one being planned by the user.

After the user narrows his choice, he should visit at least one of these references. He will find out much more by being there and talking to the references than he would over the phone.

Questions that should be asked include:

- Did the vendor deliver what was promised?
- Was communications between the client and the vendor clear and concise or were there misunderstandings during the course of the project?
- Was the documentation and the training supplied by the vendor adequate?
- Did costs change from the initial bid to delivery? If there was an increase, what was the cause of this escalation?
- Now that the system is in, what would the reference have done differently?
- What has been the reference's experience with hardware and software maintenance?

Some contractual matters also should be considered. The contract supplied by the vendor should be as specific as possible, defining the hardware proposed and describing the software that will be produced

The development of the functional specification will have provided the user with a good basis for a contract and should become part of the contract, as should any other written communication that defines what the user will be receiving.

This article, the last in a series of five dealing with the selection and evaluation of business minicomputer systems, covers some final considerations.

Only slight deviations in hardware or software costs proposed should be tolerated for the system required to meet the specification.

It is not unreasonable for a vendor to require progress payments, but a sufficient amount of the total price (usually 20%) should be held back for the final system acceptance. The contract should define acceptance very clearly.

Overall reasonableness in price should carry some weight. A bidder who is grossly higher or grossly lower than all other bidders should be viewed with suspicion.

However, I feel the very low bidder should be scrutinized more than the very high bidder. Most low bids result from a lack of understanding of the complexity of the problems or from a company trying to buy business.

Unreasonably short schedules should also be scrutinized. Systems should not be installed in a hurry. A longer schedule is often generated by concern on the part of the vendor for doing an adequate job during the design stage; it allows time for the interchange of ideas that are needed for the completeness of design and time to train, test and run parallel in the working environment.

The installation of a computer system is a complex undertaking. A successful installation can provide great benefits to a company; a poor installation can do severe damage.

One must be ready to spend a considerable amount of management time and energy from conception through implementation to help ensure system success. If management is not willing to commit the company's resources to this endeavor, the chances of success are very small.

Berkman is president of Robert E. Berkman Associates, a Ridgewood, N.J. consulting firm specializing in the selection and installation of small business systems.

Datapoint 16K Turnkey Features Roster of Accounting Software

SAN ANTONIO, Texas – A turnkey minicomputer system designed for the independent accountant has been introduced by Datapoint Corp.

Called Dataccountant, the system includes a Diskette 1100 small business system with 16K of memory, keyboard, CRT and four floppy disks, Datapoint said.

A variety of printers can be added to the system, the firm added.

A roster of accounting programs tailored specifically to the needs of independent accountants and their clients are included with the system, Datapoint said.

These include a client accounting system that produces financial statements and comparative reports for each client; a payroll package that prepares paychecks with the required state and federal reports; professional time accounting that records the utilization of the accountant's own time; a word-processing package; and an account utilities package.

Users of the system follow a "menu" operation sequence displayed on the CRT, Datapoint said. When an operator makes an error, the system flags it and indicates the correction path to take, the firm explained.

The Dataccountant system costs $19,500 with a $4,400 permanent license fee and $160/mo for maintenance. The three-year lease plan costs $637/mo with a $1,950 initial license fee, the firm said from 9725 Datapoint Drive, San Antonio, Texas 78284.

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Newspaper People Join Programmer to Design System

OCEANSIDE, Calif. – When a newspaper here wanted to computerize, a group of editors got together and, with the help of a computer programmer, designed its own minicomputer-based system.

"This is a system designed by editorial people for editorial people," according to Bill Missett, managing editor of the *Oceanside Blade-Tribune*.

The paper publishes 200 page/week, six days a week, he said.

The system, now being marketed by One Systems, Inc. here, is based on a 32K Computer Automation, Inc. Alpha LSI-2/20 minicomputer. It includes 19 video display terminals, disk drives, line printers and typesetters and cost about $200,000.

The system has total backup, Missett said, and prints a hard copy of everything so that if the system should go down, the only story lost is the one on the CRT screen. Programs are written in Assembler language.

'Reporter the Printer'

With the minicomputer system, the reporter's copy, after being edited, goes directly into an automatic typesetter. "In essence, the reporter is the printer, too; his version after editing is what appears in the newspaper," Missett said.

For the *Blade-Tribune*, one of the major advantages is the system's ease of operation. "A key problem with many computerized systems is the difficulty the average person has in learning how to run them," Missett said. "People are forced to change their habits to fit the way the computer works."

But this system "can be operated easily and informally by anyone. It requires little training and is adaptable to changing requirements."

There are 13 CRTs in the news department with 12 CRTs distributed to reporters, editors and stringers to handle the copy. One CRT is allocated for wire service proofreading and input of some correspondence copy.

In operation, reporters write their stories on the video display terminals. What the reporter types shows directly on the video screen rather than on a piece of paper.

When a story is complete, the reporter transmits it to the minicomputer, which assigns the story a number.

"The message that appears to the reporter at this point, for example, would be 'FL350,' which tells his story is about to be filed under story number L350 (L meaning local)," Missett said. The reporter then records this story number on a manual news log so it can be accessed later.

"The story is still on the screen," he added, "so any last minute changes can be made."

All changes made, the reporter hits another button and his article is stored in the mini's memory. The mini counts the story lines, gives the reporter the line count and sets his console up for the next story.

The story can then be called up any time from the computer by typing in a transaction code and the name and file number of the story to be retrieved.

Editing Capability

"When a story is accessed, 2,000 characters of the story appear on the screen at a time, leaving room to delete, add or move text around," Misset noted.

As each portion is edited, it is transmitted back to the computer and the console is automatically filled with more of the story.

When the entire story is edited, the computer provides a new line count and that version becomes the only version accessible under L350.

Once a page is ready for typesetting, the editor calls up the numbers of all stories for that page from storage to the typesetter. (Headlines are set separately, but also on a full-page basis.) When the assembly department receives the copy and headlines, the material is checked against the page dummy and the full page is pasted down.

The minicomputer system is also being used by the newspaper's classified department. Five CRTs are assigned to the department to capture linear advertising; this approach has resulted in a gain of 20% in sales time, according to a spokesman.

Under the old system, every ad was kept track of manually. With the minicomputer, however, "you simply type the ad and it is filed automatically under the proper classification, alphabetized and typeset," Missett said.

Modcomp Brings Out Trio of Offerings

(Continued from Page 46)

city per CPU, Modcomp said.

Users will work with Memory Plus as an I/O device by using standard programming techniques, the spokesman said. The system, however, will appear to function as an extension of main memory, he said.

Because there is no rotational latency, device access can occur within 1 μsec following service initiation, he added.

Enhanced Compiler

Announced with the II/2 and Memory Plus was an enhanced Fortran IV compiler system said to offer 60% improvements in compilation and execution times over the former Modcomp offering.

The language processor offers Ansi X3.9-1966 capabilities plus extensions.

The processor, which can be installed on Modcomp II and Modcomp IV minis, can be installed in the field without the addition of more core memory or other hardware features if the user already has the firm's former Fortran IV release, Modcomp said.

The Fortran processor costs "less than $100 with documentation for users who wish to upgrade" and is included with Modcomp systems being delivered, the spokesman said.

The compiler features free-format read/write to simplify the use of Fortran from remote interactive terminals, the firm said from 1650 W. McNab Road, Fort Lauderdale, Fla. 33309.

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IST Turnkeys Handle Custom Data Entry

By a CW Staff Writer

DALLAS – The Advanced Interactive Data Entry (Aide) systems from Interactive Systems Technology (IST) are three turnkey minicomputers designed for custom data entry applications or terminal system emulation, the vendor said.

Based on Data General Corp. (DG) Nova and Eclipse minis, the three Aide systems are the Remote Terminal System (Aide/RTS), the Remote Processing System (Aide/RPS) and the Business Processing System (Aide/BPS).

Aide/RTS was designed specifically for on-line real-time applications, the firm said. Multiple video displays and printers connected to a mini can communicate on-line to a centrally located host mainframe, a spokesman explained.

Because Aide/RTS is software-driven, it can communicate in any line protocol environment and to any host mainframe, IST said.

More Processing

The Aide/RPS includes the capabilities of the Aide/RTS but has the additional processing capabilities required for distributed intelligence applications, the firm said.

Data collection, remote job entry and local data base management functions can be performed by this model, the spokesman added.

Concurrent Operations

Concurrent operations on Aide/RPS can include combinations of interactive real-time data entry, data collection, remote job entry and local processing, according to IST.

The remote processing system can support a mapped foreground/background environment, it noted.

The Aide/BPS was described as a stand-alone real-time information system with interactive accounting, inventory control, payroll and other business applications.

A foreground/background environment allows the execution of an application in background with the execution of interactive data entry and inquiry in foreground, a spokesman said.

Typical Systems

A typical Aide/RTS includes a Nova 3/12 with 16K words of memory, communications interface, two CRT terminals and one 165 char./sec printer for about $22,000, including all software, the spokesman said.

A typical Aide/RPS configuration would include an Eclipse S200 with 48K words of memory, two communications interfaces, 10M bytes of disk, one 800 bit/in. magnetic tape drive, a 300 line/min printer, 300 card/min reader and eight CRTs for approximately $80,000, he added.

The Aide/BPS includes an Eclipse S200 with 48K words of memory, 10M bytes of disk, one 800 bit/in. magnetic tape drive, 300 line/min printer and 12 CRTs for approximately $95,000 from the firm at Suite 135, 4450 Sigma, Dallas, Texas 75240.

DEC Designs Newspaper Editing Unit

MAYNARD, Mass. – A turnkey text-handling and text-editing system from Digital Equipment Corp. was designed for use by small- to medium-sized newspaper publishers, DEC said.

The Decedit system permits stories to be entered into a computer system directly from terminals, on-line character readers, or paper tape, DEC said.

The system is controlled by a PDP-8 mini; users can access stories via CRTs for editorial correction, the firm added.

Up to 32 terminals can be tied to the system with the data files stored on disk pack, DEC said.

Decedit can be used as a stand-alone system or connected to larger systems for further typeset processing or on-line wire service collection, the firm said.

A basic Decedit system with 32K of memory, 4.8M bytes of storage and one VT61T editing terminal costs $75,000 from DEC at Maynard, Mass. 01754.

ACE Unveils Multiapplication Mini

WINSTON-SALEM, N.C. – The ACE-000/40 from Automation Control Engineering (ACE) is said to be a multiapplications system designed for industrial and business environments.

Incorporating a 16-bit Texas Instruments, Inc. 960B minicomputer, the system also includes a Tri-Data Model 20 digital read/write recorder that stores 250,000 16-bit words on a single Carti-File; Centronics Model 306 matrix printer operating at 60 line/min; and a TEC, Inc. TEC-450 CRT, the firm said.

Software for the system includes a complete set of utilities, ACE said. Peripheral control boards are also available.

The system costs $20,000, it added from Box 11709, Winston-Salem, N.C. 27106.

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The Course Work

Roy Freed, the seminar leader, will review all types of contracts impacting computer use, including.
- the lease or purchase of systems — bundled or unbundled
- the purchase of time-sharing, data processing services and consultation
- the use of facilities management
- and others

In addition to a basic review of the laws regulating DP contracting and taxation, you'll learn how to apply the legal rules in a positive way to gain advantage for yourself. And *bring your own contracts, because they will be an important part of the course work.* All registrants are invited to bring their contract forms to the seminar for discussion and review to the extent feasible

In the workshops you'll gain practical experience with the techniques under study. You'll learn, for example, how to recognize opportunities to negotiate, how to establish performance goals and conditions while you can still do something about it, how to avoid costly litigation and resolve disputes, and how to achieve significant tax savings through the proper structuring and wording of contracts. Plus, you'll gain valuable experience with techniques for handling any transaction. Overall, you'll have an excellent chance to learn a great deal in a short time, as many of our earlier participants have found

"This seminar will provide me with an ability to evaluate future contracts and renewal contracts for refinement purposes. This course has been excellent."
F. Ford, Entrex, Burlington Mass

"I considered this to be a very gooo fundamental review of basic problems associated with EDP contracting."
J. M. Aubry Canadian Government

"This was an exceptionally well organized seminar. The material presented was significant and useful. This seminar would be of great practical value to someone without computer contracting experience as well as serving as a useful outlet and review for those with more background and experience."
William C. Prinn Director Advanced Planning
Chessie System, Baltimore, Md

"I had no idea that we would have the opportunity to communicate so closely on an informal basis. That, combined with your excellent preparation, made this experience the most rewarding seminar experience I've had. I commend you for what I regard as a most worthwhile seminar, and thank you for your genuine interest in communicating with, and not merely to the participants."
SV, Attorney, Worcester, Mass

"The appropriateness of this seminar is extremelly inportant. This area of the Computer Science field has generally received little or no attention from user, vendor or the legal professions."
D. J. Connelly, Development & Control Manager
Norton Company, Worcester, Mass.

Roy N. Freed is the Seminar Leader

Roy N. Freed is internationally known for his acuity and expertise in this field, and he will personally direct the entire seminar. A graduate of Yale Law School, Roy has served as inside counsel for a major manufacturer of digital computers, and is currently engaged in private corporate practice in greater Boston with the firm of Pollock, O'Connor and Jacobs. He teaches at Boston University Law School, and has written many articles on this subject, including "Computer Fraud, a Management Trap" (Business Horizons), and "Get The Computer System You Want" (Harvard Business Review). He is the author of the book, *Computers and Law — a Reference Work,* now in its fourth edition, and he also edited the complete, extensive course materials used in this seminar.

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The charge for the entire 2½ day seminar, including continental breakfasts, luncheons, and all course materials is $325 per registrant. Additional registrants from the same company are charged only $275. This does not include hotel rooms, if necessary, but we have reserved space at the seminar hotels for attendees who wish them.
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Lack of Support Staff Cited

Mini Makers Seen Indifferent to First-Time Users

DALLAS – "If you are a potential end user and have never dealt with a minicomputer supplier, you may be surprised by your first experience. Some of the larger mini makers exhibit an air of indifference toward new end users that borders on arrogance.

"It may seem that you have to prove yourself worthy of owning one of their computers," Wayne Churchman, programming supervisor for the city of Dallas, told a Computer Caravan session here recently.

This rather disturbing attitude is not accidental, but the result of a deliberate emphasis by most mini makers on sales to OEM customers and sophisticated end users, Churchman said.

This strategy reduces the manufacturers' requirements for support personnel and provides low-risk profits. Regardless of past advertising by the large mini makers about being total systems companies, mini makers have not been in the applications software development or support business, he added.

The only problem with this strategy is that it limits the potential market rather severely, Churchman said. Users in the business applications area will demand more support than most mini makers have been prepared to offer, he noted.

This is one of the reasons IBM is looking strong in the business area. Of the major minicomputer companies, it is perhaps the only company staffed to provide the support demanded by this market, Churchman added.

Expect the major manufacturers to move toward providing more support to end users, he said. Some will move faster than others in this area, he predicted.

The primary impetus in the growth of minicomputers over the next five years will come from two application areas: the use of minicomputers in networks and the use of minicomputers in general-purpose stand-alone applications, Churchman continued.

The resounding theme in data processing is distributed processing, Churchman said.

In the late '60s the trend was toward centralization of computer facilities, but the economics of minicomputers have now reversed the trend, he continued.

Minicomputers can provide rapid response to users who are remote to the central facility and can still take advantage of the processing capabilities of the larger computer. Both the hierarchical and ring network structures offer certain advantages, he said.

Potential Users

The important point, Churchman emphasized, is that large system users are all potentially users of multiple minicomputer systems. The city of Dallas already has three such systems with more in the planning stages, he added.

The second application area which will see significant growth over the next five years is the stand-alone general-purpose minicomputer application.

Business applications on minicomputers have been slow in developing because of several factors, he indicated. Mini suppliers have not been willing to supply the support this market demands, nor has suitable software been available. But all of this is changing, Churchman said.

In addition to the business area, time-sharing users are finding dedicated minicomputer systems to be a bargain compared with time-sharing services for some applications. Time-sharing service companies are going to take a beating as many users switch to minis over the next five years, he predicted.

Mini Software

While technological advances have driven hardware development, there have been no similar [illegible] Churchman added.

However, [illegible] provide [illegible] found [illegible] those of the larger systems. These general-purpose operating systems support concurrent real-time, on-line and batch users in multiple programming languages and provide [illegible] dynamic [illegible] level [illegible] language.

But perhaps the biggest news is in programming languages. With [illegible] there has been [illegible] applications [illegible] more memory and use [illegible] language such as [illegible], he said. This trend [illegible] with [illegible] resulting [illegible] on the larger [illegible]. The [illegible] give the [illegible] applications area [illegible] he added.

"While I don't feel that Cobol is the best language in the world, it has become the de facto standard for the larger commercial DP installations," Churchman said.

Data base management systems (DBMS) will also become available for the larger minis and should also provide a push in the business applications area, he added.

During the next five years, continued hardware improvements can be expected either in terms of lower costs or increased performance, Churchman said.

The trend to semiconductor memories will continue with increased use of memories with extensive error detection and correction capabilities. Memory chips are becoming larger with 4K chips now in common use. "A 16K chip should be a reality within two years," he predicted.

The price/performance of peripheral devices will also improve. Paper tape and cards will die a slow but natural death. CRTs and cheaper disk storage will reign supreme, he said.

Data General Machines Interfaced To Summagraphics Tablet/Digitizer

FAIRFIELD, Conn. – Summagraphics Corp. has an interface which it said links its Data-Tablet Digitizer to minis made by Data General Corp. (DG).

The interface can occupy any slot of a Nova, Nova 2, Nova 3 or Eclipse and extends the full capabilities of the tablet to DG users, Summagraphics said.

The interface transfers X-Y coordinate information from the Summagraphics controller to the [illegible] and operates in either programmed I/O or interrupt mode.

I/O instructions permit flexible program operation in either mode, the firm said.

The digitizer operates with a resolution of [illegible] line/in. and [illegible] line/in.

The interface with a 15-ft connecting cable costs $[illegible] from Summagraphics Corp., [illegible] Brentwood Ave., Box [illegible], Fairfield, Conn. [illegible]

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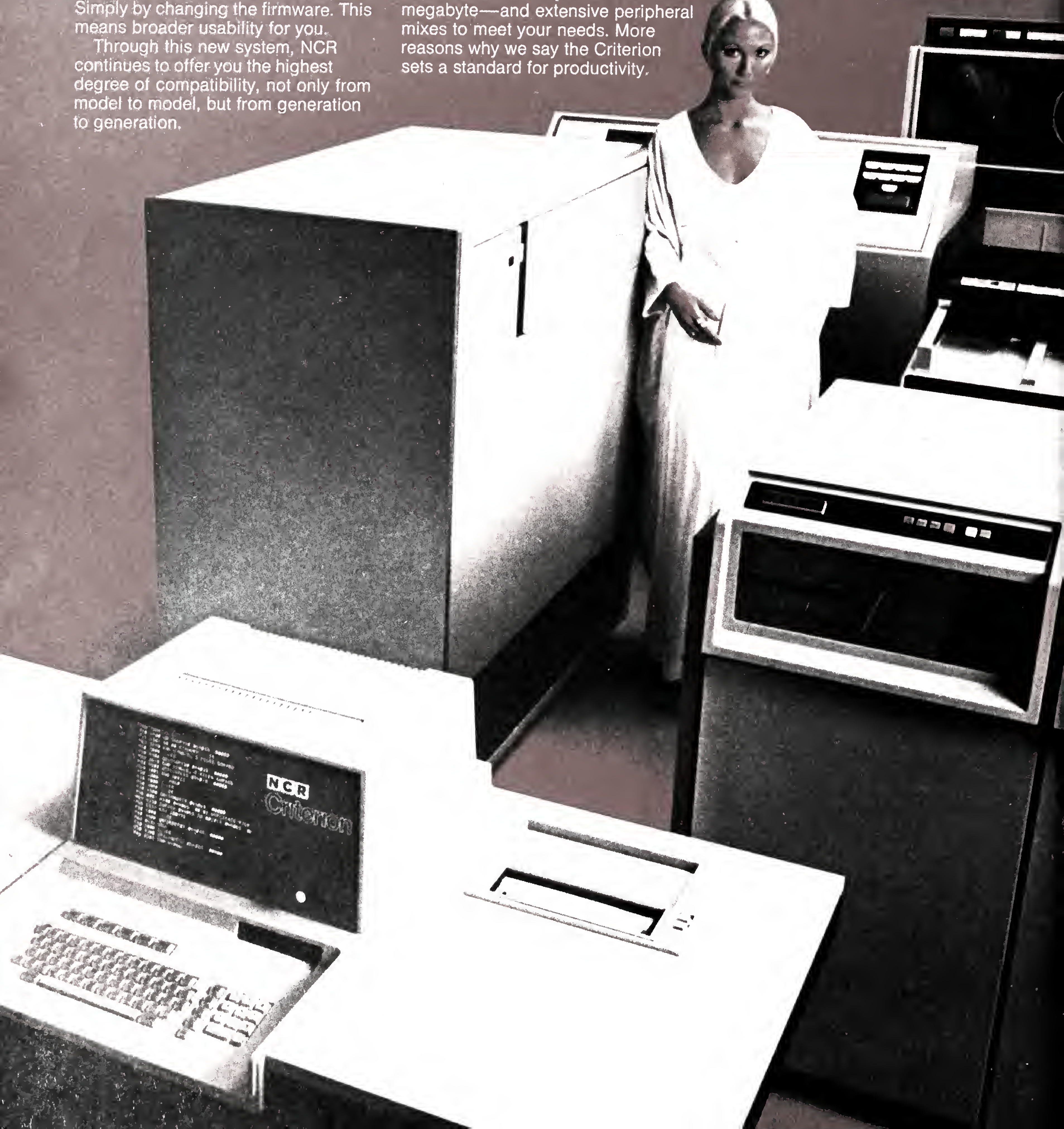

Service Bureau, Minis Centralize Financial Control

By Patsy Jacobs

Special to Computerworld

BEAUMONT, Texas – The question of the pros and cons of centralized financial management has been answered at my firm by combining the use of a service bureau and a minicomputer network.

As Gulf Consolidated Services, Inc. expanded, the need for central financial control became increasingly apparent. Our roots go back to the founding of Gulf Supply Company. The owner and two employees sold pipes, valves and related supplies to refineries and contractors in the area.

Today, there are 10 companies, over 1,200 employees and a chain of electrical supply stores.

First Try a Flop

Our initial attempt to centralize financial management and control failed. In 1956-57 we installed an IBM 360 system with on-line terminals at our sales outlets.

The idea was to input sales and purchasing information at the source to a central computer which would do billing, payables and inventory management while producing reports.

The system looked excellent on paper; software costs for operating it, however, ran higher than anticipated.

But the main problem was that the input parameters required by the system didn't provide the flexibility needed at the points of sale. We needed a way to do the detail work at the local level while maintaining audit and cash control at a central facility.

Posting Machines Next

We removed the 360 and installed six NCR 395 posting machines for writing invoices and checks. These created by-product punched paper tapes, which we delivered to a service company.

The tapes updated our general ledger and provided new data for financial and other reports required by management.

Everything was fine through the middle of 1974. By then, we were writing some 40,000 invoices a month, leading to backlogs in posting. Some invoices were mailed three or four days after we got the billing information.

So we began searching for a more efficient way to write invoices and payables, while also preparing data for the service company's NCR Century 201.

In January 1975, we replaced the posting machines with six NCR 399 accounting minicomputers. Four of these are currently used for writing invoices; the other two are used for payables.

Five of the units have 10K of memory and one magnetic tape cassette handler; the sixth machine has a 14K memory and two cassette handlers. The last is used for sorting information onto tape cassettes and also for program preparation.

Our posting machine operators learned to operate the NCR 399s in a matter of days. The machines step them through each function.

Furthermore, I have a realistic means of keeping track of the productivity of operators. At the end of each shift, reports can be written that list the exact number of lines and invoices (or checks) written by each operator.

With this system, delivery tickets written when orders are taken at the point of sale eventually become invoices. When the local sales people write these tickets, they list account numbers assigned to the customers, the major class codes of the items sold, the quantities sold, the costs and resale prices.

These delivery tickets are forwarded to us daily by mail. Our operators key from the written information and extend the charges.

After we extend the delivery tickets, the billing section verifies each one. Two electrostatic copies are then made of the top portion of each ticket. One is mailed to the customer, and the other copy is placed in the open invoice file.

When payments are received, we pull the open invoices from the file and write the customer and invoice numbers onto tape cassettes, along with the amounts paid. The deposit totals are balanced, and the cassettes are sent to the service company daily.

This eliminates the invoices from the master computer files. At the end of each month, the computer only writes aged statements for customers with payments due. Our credit manager receives an aged analysis report.

The same system is used for payables. Once a vendor's invoice is approved at the local level, it is forwarded to our payables section, which marks the pay date and either types the check or pulls it from the files if it is prewritten.

The invoices and checks are given to us in batches along with an adding machine balance tape. We voucher each check and, at the same time, write the vendor number and amount on a cassette. At the end of each batch, the NCR 399 balances to the adding machine tape.

Jacobs is DP supervisor for Gulf Consolidated Services, Inc.

DAC Printer Systems Linked to IBM 3/8

STAMFORD, Conn. – Digital Associates Corp. (DAC) has enhanced its DAC/3 Model 400 and Model 700 line printers to interface with the IBM 3/8, the firm said.

The DAC/3-400 is a 132-character, 400 line/min printer featuring a sound-deadening cabinet and static eliminator, single line memory and a paper slew rate of 15 in./sec. The DAC/3-700 printer is a 750 line/min printer.

The Model 400 costs $17,750 or $445/mo on a three-year lease plan. The Model 700 costs $22,995 or $545/mo on the three-year plan from the firm at 1039 E. Main St., Stamford, Conn. 06902.

Persci Has Diskette Drive

MARINA DEL REY, Calif. – A dual-diskette OEM drive said to be smaller in size than many single-diskette drives is available from Persci, Inc.

The Model 270 incorporates two read/write/erase head assemblies and measures 8.6 in. by 4.4 in. by 15 in., the firm said.

The drive is IBM 3740-compatible and accommodates a total of 3.8M bits of data per drive in IBM 3740 format, Persci said.

The unit costs $880 in 50-unit quantities from the firm at 4087 Glencoe Ave., Marina del Rey, Calif. 90291.

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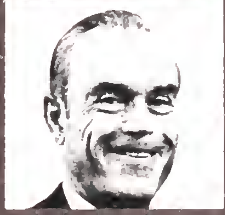
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8:30 am—9:50 am: REGISTRATION. Pick up your seminar materials and get ready for two days of information-packed sessions.

9:50 am: WELCOME. *Susan Alt,* Editor, *Business Insurance; Edward J. Bride,* Vice President, Editorial Services, *Computer World.*

10:00 am: FACILITIES PLANNING: WHAT TOP MANAGEMENT NEEDS TO KNOW. You learn what steps you can take in the planning stages to minimize computer operations risks from *Robert H. Courtney,* Director of Data Security and Privacy, IBM Corp.

11:15 am: EMERGING RISKS—CLOUDS ON THE HORIZONS. *Robert V. Jacobson,* Assistant Vice President, Chemical Bank, reviews areas of increasing risk which threaten to become major management concerns, such as theft, sabotage, physical loss, and illegal access.

12:15 pm: LUNCHEON. Take this opportunity to get acquainted with your fellow registrants. Exchange ideas and information.

1:30 pm: RISK ROUNDTABLES. Three concurrent sessions—attend the one of your choice. The sessions repeat at 3:30 pm so you can attend a total of two.

EMPLOYE DISHONESTY. *William A. Mahoney,* Vice President, Marsh & McLennan Inc., tells you how to handle a fidelity loss when the computer is involved.

AUDITING THE COMPUTER. How to make sure the computer program does ONLY what it is supposed to do . . . discussed by *Joseph J. Wasserman,* President, Computer Audit Systems Inc.

ERRORS & OMISSIONS RISKS. An examination of the many problems inherent in providing data processing services for customers, including quantifying the possible errors and omissions exposure, types of insurance available and user problems that have been experienced.

3:30 pm: RISK ROUNDTABLES. Repeat of above sessions. Attend the one of your choice.

5:30 pm: RECEPTION. Join your fellow registrants for cocktails and stimulating conversation.

6:15 pm: DINNER.

7:30 pm: NEGOTIATING THE COMPUTER CONTRACT. *Roy N. Freed* of the greater Boston law firm of Pollock, O'Connor & Jacobs tells you how a properly negotiated lease contract is one of the most effective means of obtaining relief from a problem with a computer equipment supplier.

FRIDAY, JUNE 18

9:00 am: HOW TO PREPARE FOR BUSINESS INTERRUPTION. *Paul W. Miles,* Executive Vice President, I. Berman Co., discusses the risks involved in a computer stoppage interrupting your company's operations and how you can effectively plan for recovery.

David Warren, CPCU, Partner, Warren, McVeigh, Griffin & Huntington, tells you how to fund business interruption losses through insurance and self-insurance so you get the money you need to get back in business.

10:30 am: LOSS PREVENTION ROUNDTABLES. Two concurrent sessions. Each repeats at 1:30 pm so you can attend both.

RISK MANAGEMENT: DATA TRANSPORTATION & NETWORK COMMUNICATION. *Rees S. Himes,* Assistant Vice President, Marsh & McLennan Inc., identifies and discusses various kinds and causes of losses through transporting and telecommunicating data and tells of ways to minimize and control losses.

CASE STUDIES OF COMPUTER RIPOFFS. *Donn B. Parker,* Senior Information Processing Analyst, Information Systems Group, Stanford Research Institute, takes an in-depth, eye-opening look at two examples of the computer as a tool of the corporate criminal.

12:30 pm: LUNCHEON. No speaker, so take advantage of this opportunity to discuss areas of mutual interest with your fellow registrants.

1:30 pm: LOSS PREVENTION ROUNDTABLES. Repeat of 10:30 am sessions. Attend the one of your choice.

3:30 pm: HOW TO IMPLEMENT A GOOD RISK MANAGEMENT PROGRAM. Panel members *William D. Hahn,* Principal Consultant, George Betterley Consulting Group, *Donald P. Fitzgerald,* Manager of the Management Consultant Services Division of Ernst & Ernst, and a corporate client discuss the nuts and bolts of establishing an effective and workable risk management program for data processing exposures.

4:30 pm: ADJOURNMENT.

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The fee entitles us to admission to all sessions, a detailed workbook and supplemental materials, scheduled meals and reception. (Hotel accommodations are not included in the fee. Registrants automatically receive Drake Hotel reservation forms with their Seminar confirmation.) If there's a change in our plans and we're unable to attend the Seminar, we understand we will get a full refund if we notify you by June 7, 1976. (For cancellations received after June 7th, there's a $25 service charge.)

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CI Notes

Sanders vs. IBM Date Set

CONCORD, N.H. U.S. District Judge Hugh Bownes recently told attorneys for Sanders Associates, Inc. et al and IBM to be ready for trial by Jan. 1, 1979 in the antitrust case filed by Sanders.

Bownes also set forth procedures for winnowing out documents, commenting, "The problem seems to me to be that too many documents are being produced."

All documents to be used must be examined by the parties not later than Jan. 1, 1977. Documents claimed to be privileged must be identified.

Bownes reminded the parties he, not they, would decide on the relevancy or materiality of a document or question.

He told counsel to file by July 1 a suggested timetable for depositions and interrogatories, which should be started this summer.

Counsel must file a statement of the type of evidence that will be based on summaries and analyses of data made by a computer by Sept. 1.

Calcomp Date Confirmed

SAN FRANCISCO – Judge Ray W. McNichols has confirmed Nov. 8 as the trial date for California Computer Products, Inc.'s (Calcomp) antitrust suit against IBM.

At a recent pretrial hearing, the judge also denied Calcomp's request for documents IBM claimed as privileged that were produced in the Control Data Corp. and government cases.

SEL Closes California Center

FORT LAUDERDALE, Fla. – Systems Engineering Laboratories, Inc. (SEL) has closed down its West Coast design and development center and consolidated operations at its headquarters here.

The move was made because of serious logistics problems, according to Gerard Guyod, director of planning and technology.

There has been no reduction in the scope of the work and no delays were experienced as a result of the move, he said.

The West Coast facility in Newport Beach, Calif., was established less than a year ago, but that was before Buyod was in charge of the operation, he said.

Sun, Graham End Talks

GRAHAM, Texas – Sun Ventures, Inc. and Graham Magnetics, Inc. have ended talks relating to the acquisition of Graham by Sun.

The firms said a $26 million stockholder suit filed against Graham which charged that fraudulent and misleading statements led to investments in Graham caused legal problems preventing completion of the proposed acquisition.

Doubt Demand

OEMs Skeptical About IBM-Type Floppy

By Molly Upton
Of the CW Staff

Although independent makers of floppy disk drives surveyed recently were generally skeptical of market demand for IBM 3600-type double-sized drives, they agreed they will put such a unit into production if the market demand is there.

Two media makers indicated they are ready and able to provide the double-sized diskettes required by devices announced recently by both IBM and Burroughs Corp.

Many of those surveyed based their reactions on the assumption the IBM drive, included in the 3601 and 3602 financial controllers [CW, April 12], contains the same format as that in the 3740 data entry system. The IBM double-sided floppy has a capacity of 560,000 characters.

The Burroughs floppy, unveiled as part of the B80 system [CW, May 3], has a capacity of 1M byte per diskette, which the firm said was accomplished through increased bit density. Both drives use a head on each side to read and write the data.

Burroughs Chairman Ray W. Macdonald said at the B80 press conference the firm is exploring all avenues of marketing, including OEMing subsystems.

However, a spokesman said, no further information is available at this time.

Shugart Studying Market

Ferrell Sanders, director of marketing for Shugart Associates, Inc., said he's "not sure a double-sided drive makes sense for our customers.

"As a practical matter, very few are using IBM compatibility – so why go to double capacity in that manner?" he asked.

But, "we're going to make what the customers want," he said, and the firm is studying the marketplace.

In Sanders' view, there are less expensive ways to increase capacity, such as doubling linear density or packing more bits on a track and increasing the number of tracks on one side.

Sanders was "kind of surprised" at the manner in which IBM chose to increase the capacity on diskettes. He said he suspected IBM's next step would have been to double the linear recording.

However, he conceded that would destroy compatibility with 3740.

Sanders said he thinks the Burroughs announcement will stir up activity in the floppy drive area as Burroughs' competitors explore using and/or increasing the capacity of floppy drives.

A Magnetic Peripherals, Inc. spokesman said that firm is looking at the IBM announcement and expects to have a position on product possibilities soon. Memorex Corp. would not comment on future product plans.

(Continued on Page 57)

Programmable Printer Terminals To Grow Sixfold by 1980: IDC

By a CW Staff Writer

WALTHAM, Mass. – The installed base of programmable printer terminals – both stand-alones and clustered systems – will more than increase six-fold from 47,300 in 1974 to 303,300 by 1980, according to a report from International Data Corp. (IDC), a market research firm here.

The entire terminal printer market is expected to double between 1975 and 1980 from 299,200 units to 719,000 units.

Programmable stand-alone units should grow from 81,500 in 1975 to 274,000 in 1980 while the number of clustered units will soar from 12,500 to 240,000, according to IDC.

Editing keyboard printers, which were defined as having interactive capability and buffer memory, will more than double from 17,000 to 38,000 in 1980, the report predicted.

Conversational keyboards – those with no buffer memory – should decline from 175,000 in 1975 to 130,000 in 1980, IDC said.

Remote batch units will grow from 13,200 to 37,000. The report defined remote batch terminals as those with input/output functions but no processing capability.

One of the reasons remote batch units will not show greater growth is that an increasing number of units are expected to fall in the programmable category, according to Joan Ross, IDC analyst.

The report, entitled "Terminal Printer Market," found the average installed terminal printer to be a slow-speed unit, compared with the higher speed printers on the market.

Although serial printers were also readily available in 80- or 165 char./sec speeds, 45% of the currently installed serial printers surveyed operated at 30- to 40 char./sec.

Similarly, 77% of installed line printers operated at 350 line/min or less, while printers with speeds of 600- to 1,200 line/min were available.

The average installed terminal printer operated only 20 hours a week even though it was available for printing for about 60 hours, the survey found. It was not uncommon to have a printer operate only one hour a day, IDC noted.

"With these slow speeds and short print-

(Continued on Page 55)

In Year Ended July '75

CPU Base Up 36.8% in Brazil

RIO DE JANEIRO, Brazil – Aided by growth in the mini and large computer areas, the installed base of computers in Brazil rose by 36.8% or 1,021 systems in the year ended July 1975.

The growth rate represented a decline from the 46.6% rise reported the previous year, according to figures released by the Brazilian government's Coordinating Committee of Electronic Processing Activities (Capre) and reported in *Data-News*.

With a total of 3,793 systems installed, Brazil ranks 12th worldwide; the country's installed base represents 65% of all computers in South America, according to the article.

Installations of minicomputers, those valued at less than $30,000, totaled 2,266 or 59.7% of the entire base at the end of July 1975.

There were 678 new minis sold in Brazil during that year for a growth rate of 42.6%, the second fastest growing category.

Taking minis out of the total figures left Brazil with a 29% growth rate for the year, according to Capre.

Burroughs ranked first in the mini field with 944 systems for 41.7% of the market. Olivetti came in second with 33.9%; Philips third with 10.2%; and NCR fourth with 8% among 10 vendors in the field.

Burroughs Ranked First

Looking at the entire installed base in terms of numbers of systems, Burroughs ranked first with 1,167 units of 30.8%. IBM was second with 906 systems or 23.9%, followed by Olivetti with 769 systems or 20.2%.

But excluding the minis presented a different picture. IBM, with 906 systems,

(Continued on Page 55)

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Brazil's CPU Base Grows 36.8%

(Continued from Page 54)

ranked first with 59.4% of the installed systems and Burroughs was second with 223 units or 14.6%.

Although very large systems, those costing more than $1.2 million, represented the fastest growing segment of the market with a 45.2% growth rate, they accounted for only 1.6% of the number of total installations. During the year, 19 systems were installed for a total of 61.

The growth rate for large systems, those valued at $600,000 to $1.2 million, fell considerably, with a 13.9% increase compared with 60% a year ago.

The 10 new systems brought the total of large computers in Brazil to 82; they accounted for 2.1% of all Brazilian installations, according to the figures.

The rise of medium systems also slowed down. Costing from $180,000 to $600,000, this category rose by 11.8% or 35 systems compared with 28.6% in the 1973-74 time frame.

Of the total 332 medium-sized systems in Brazil, Burroughs had 25.9% of the market and IBM 48.8%. This was the sector where IBM's share was smallest, excluding minis, according to *DataNews*.

Honeywell-Bull ranked third with 12.7% of the medium-scale market, followed by Univac/Siemens with 6.6% and NCR with 2.7%, the figures showed.

Small Machines Up

Small computers, those costing $30,000 to $180,000, were second only to very large systems in terms of percentage increase and second to minis in total units, *DataNews* said.

This category grew by 279 computers or 36.2% for a total of 1,052 small systems installed. The statistics included a reclassification of 48 Digital Equipment Corp. units from minis to small systems and some NCR units from small systems to minis, the article observed.

IBM was the leader with 625 systems or 59.5% of the market. It installed 150 machines during the year but, as with medium systems, its ranking dropped by 2%.

Burroughs ranked second in small systems with 11.3%, followed by DEC, 9.6%; Hewlett-Packard, 6.8%; and Univac/Siemens 4.1%, according to the figures.

Study Predicts Rise In Printer Terminals

(Continued from Page 54)

ing hours, the average terminal printer uses only 5,600 original pages each month: 33% of the output is single-ply paper and 67% is multiply; 83% is standard paper and 17% is custom," the IDC report stated.

The total terminal printer output, 15 billion original pages in 1975, will increase to almost 50 billion by 1980, the report said. This growth in the volume of paper use will be the result of two major factors, it forecast – growth in the use of paper by installed printers (3% to 6% a year) and the rapid growth of the terminal printer market.

Burroughs Trims Belgian Plant

DETROIT – Burroughs Corp. has closed the manufacturing portion of its Seneffe, Belgium plant.

A spokesman said the plant's capacity had "become excess to our needs." The plant's production of Series L business minis and Series TC terminals is being transferred to other international facilities.

The engineering portion of the plant will remain in operation.

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John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams. Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is $300. Additional registrants from the same company are charged only $250.

Wash., D.C.	Stouffer's National Center Inn	April 26-27
Atlanta	Hyatt Regency Atlanta	May 3-4
St. Louis	Marriott at Lambert	May 24-25

Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

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OEMs Doubt Demand for IBM-Type Floppy Drives

(Continued from Page 54)

A spokesman for one large OEM source of IBM-compatible floppy drives said his firm would look at the product when it comes out and then evaluate the market before it decides whether to make a similar drive.

"Just because IBM announced it doesn't mean we'll automatically say we'll have one too," he said.

However, " 'IBM' is a magic word. People will ask for a product even if they don't need it," he added.

IBM's improved access times – six to nine times faster than its previous floppy system – barely brings the speed up to those offered by many independents, he observed.

Product Life Questioned

Bill Young, manager of applications engineering at Orbis Systems, Inc. said he tends to believe the IBM product will remain internally in IBM systems and also wondered about the life of the product.

As far as the OEM world, he agreed with others when he said he doubts if he'll see the drive in the OEM market soon because there are too many other less expensive ways to increase capacity.

"It's a technologically sound way to develop the capacity of the disk, but I don't necessarily approve of the approach since I think it places a burden on the media," he said.

On the other hand, he added, "it's a forgiving way to get double the capacity."

Assuming the format is 3740-compatible, the tolerance level for error is quite high, he explained.

Orbis has been thinking more of either increasing the track density or bit density, he said.

"I don't believe we'll come up with an identical product," he said, adding "I don't know if" the IBM double sided-type floppy drive "will find its way into too many non-IBM applications.

"It seems there would be a bit more wear on the media," but perhaps manufacturers have found a way to overcome this, he said.

Robert Siggelkoe, computer group product and planning manager at BASF, said media makers will be able to supply double-sided diskettes with little trouble.

However, he noted there will be a significant loss on the yield of diskettes so prices will be higher.

Currently those diskettes being shipped for one-sided use are certified only on one side, giving the manufacturer two tries at certifying a diskette. However, for use in double-sided recording and reading, both sides must meet specifications, he observed.

Siggelkoe said BASF has not supplied floppies to be used on both sides, "the flippy floppy," since he feels there is a current lack of write protection that could allow inadvertent use of the wrong side.

Some of the IBM System 32 sector disk customers are asking for write inhibit holes as additional protection, he said.

Siggelkoe assumes IBM and Burroughs have done something to afford this protection. From a manufacturing standpoint however, both sides are coated and polished, and the other side could be formatted, he said. "It's been waiting for the equipment.

Carl Holder, manager of product management at Information Terminals Corp., agreed making diskettes for drives that read both sides should be no problem.

"We've been making a double-sided floppy for two years," he said, explaining these have to be removed and flipped over for use on the other side.

The change by IBM won't bother the media manufacturer because it doesn't require new tooling, he said. Increased density, such as on the Burroughs, can be handled by electronic means, he added.

One potential problem Holder sees is user identification of the proper type of diskette. For instance, users have to select the right kind of format for their particular machines; the onus will be on the salesperson to discern the right media for individual customers, he said.

Holder thinks there will not be much standardization on the floppies other than in the IBM systems.

"It seems like a lot of people are going to be departing." For instance, at the National Computer Conference there will be several vendors introducing products with a minidiskette that is about 5 in. in diameter with about 100,000 bytes, he said. The current units have an 8-in. diameter.

Even within the IBM systems, Holder suspects IBM will have two sets of floppy drives for the near future as it will not want to impact its 3740 base.

Siggelkoe remarked he doubts if the double-sided flexible disk will be used much in the data entry application field since it has a higher capacity than needed.

DPers Gets Posts On Patent Body

WASHINGTON, D.C. Representatives from IBM and Bell Laboratories have been appointed to the Patent and Trademark Office Advisory Committee.

Secretary of Commerce Elliot L. Richardson named Wallace C Doud, vice-president of commercial and industry relations at IBM, and William L. Keefauver, general legal and patent counsel at Bell Laboratories, to the committee.

The committee will advise the Commerce Department's Patent and Trademark Office.

The major part of the committee's efforts will be devoted to considering patent matters, such as the Patent and Trademark Office's patent-examining operations.

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For Distributed Processing

B80s Aimed at L Series Users, Banks

By Nancy French

Of the CW Staff

DETROIT – Burroughs recently announced B80 product line will be aimed at L series users as well as about 10,000 banks that, judged by the number of transactions per day, would be ideal candidates for a system in the B80's price range [CW, May 3], according to Ray W. Macdonald, chairman of the board at Burroughs Corp.

The B80 line, which Burroughs said will be expanded to an entire family of compatible products by the end of this year, is Burroughs' answer to distributed processing.

"Five years ago, large and medium-size organizations generally thought centralization was the way to go for data processing," he said. Eventually, however, regional officials found themselves losing control of their records to a centralized data base.

At a time when more management responsibility was being placed in local cost and profit centers, lack of sufficient management information at that level became a problem, he said.

As the centralization trend increased, the central DP facility became so overburdened with transaction processing it was also unable to provide management reports needed at headquarters.

B80 Work Began in '69

As early as 1969 Burroughs began to question the concept of centralization, and work started on the B80, he said.

B80s near final assembly at plant in Plymouth, Mich.

While distributed processing becomes more feasible as costs decline, this in no way signals any dimunition in the need for good management information at headquarters, Macdonald said. Large central computers will still be needed to interface with smaller distributed systems.

The new product line puts "sophisticated information" where it is needed – in both the regional offices and in the headquarters operations – and at the right price, he said.

Programs written for the B1700 and the B700 need only be recompiled for use on the B80. As a result of products introduced later this year, the user will be able to upgrade "with ease" by module, with complete program compatibility, according to Macdonald.

B80 system users are expected to operate that system easily after a one-day training program, he said.

Many standard packages will be available for the system, including programs that have been in Burroughs' library for many years and are well tested, Macdonald said.

While Burroughs will be happy to tailor these packages to users' needs for a fee, the firm's policy will be to urge customers to adapt to the standard application programs as much as possible.

Ray W. Macdonald

CW Photo by N. French

"Customizing is tremendously costly to the user and becomes a trap," Macdonald added. The large user understands this already.

The firm will continue to manufacture the Ls as long as there is an attractive market for them, Macdonald said. The B700s, too, still have considerable life, he said, adding that the recently announced B730 considerably enhanced this product line [CW, April 12].

Development of the B80 was parceled to many different parts of the Burroughs organization, Macdonald explained.

While the concept and product description originated in the home office here, much of the engineering development was completed in Cumbernauld, Scotland, he said.

The super mini disk was designed in Glenrothes, Scotland, but is being manufactured by "various OEMs" which Macdonald declined to name. The disk drives, however, are being manufactured by Burroughs' Westlake, Calif., plant.

Design of the printer came originally from an OEM, but the model presently being offered with the system will be manufactured by Burroughs in Glenrothes, Scotland. The cassette drive will also come from Scotland, he said.

The 60 char./sec printer comes from the firm's Belgian plant, and the faster printer will be made in Paris, he said. Integrated circuitry comes from Rancho Bernardo, Calif., and circuit boards from Carlsbad, Calif. The displays are being made in Plainfield, N.J.

Macdonald attributed his company's success in competing against IBM to the firm's long history in the recordkeeping business – especially banking, which he called Burroughs' number one market.

"It's no secret Burroughs was founded by a banker," he said.

Who is Miles Benson, and why is he writing about things that went wrong?

Not many people aspire to become experts on failure, but the man behind the pseudonym "Miles Benson" has made a career-long hobby of things that go wrong in the computer business. Collecting information from contacts around the country, "Miles" retires to the back seat of his Edsel where, for several years, he has turned out columns on catastrophes (and less spectacular failures) for *Computerworld*. Now he has compiled the best of the worst into a single book:

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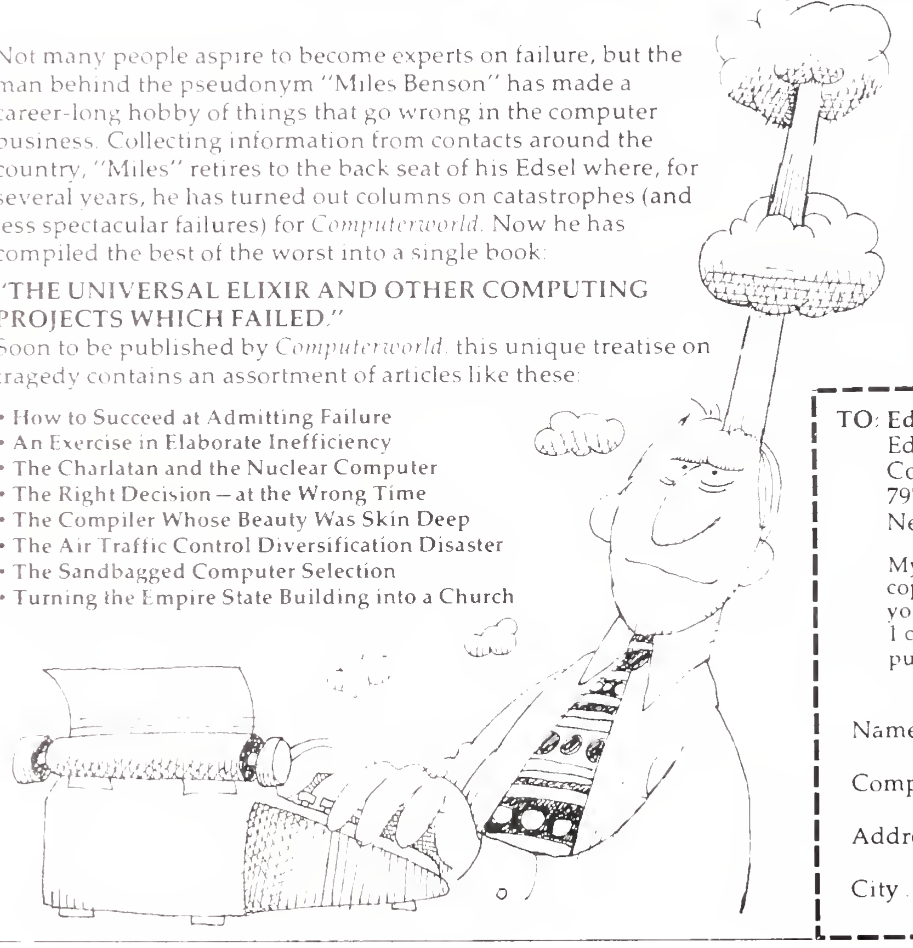

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Software Vendor Believes Industry Still 'Prenatal'

By John P. Hebert
Of the CW Staff

ATLANTA – "The software industry is really in a prenatal stage," Guy A. Colaneri, vice-president of Management Science America, Inc. (MS), said here in a recent interview.

Today, software houses cannot keep up with the hardware state of the art, he said, but that will change in the future.

However, if MSA's last quarter – the second best quarter in the company's history – is any indication, then the "birth process" should begin soon. It can at least be taken as "a significant sign of growth of the software industry," Colaneri said.

"We feel most of the prospective users of software are still virtually untapped, he said, but business for MSA is "superb."

For organizations seriously in the software industry, business is good, he said.

MSA has recently adapted its software systems to compete in the IBM 3 market, "but the market there is limited for our type of software, when you consider the vastness of the IBM 360/370 and Burroughs and Honeywell market.

"It's a fraction of that market," Colaneri noted.

'Dramatic Growth'

MSA has realized "dramatic growth" since its bout with bankruptcy in 1972 [CW, Sept. 20, 1972], but Colaneri believes the "general industry is still virtually untapped," even though it contributed about $6.5 million to MSA's total $8.5 million to $9 million revenues in 1975.

The banking market, which has been a staple of MSA's revenue diet, can be defined very easily, he said. Many years ago, most of the software industry's efforts were directed toward the Federal government, insurance companies and banks, but the increasing use of microcomputers and minicomputers "allow a much greater influx into general business."

CW Photo by J. Hebert
Guy A. Colaneri

MSA is beginning to expand into the market opened by minicomputers, Colaneri indicated, and has also expanded into the foreign market, with some sales on "some of our software in Europe.

"We have only scratched the surface of minicomputer installations. When this market is quintupled in the near future, then you're talking about a significant market that will have to be dealt with," he said.

Minicomputer vendors will have to offer packaged applications software to enhance their positions, Colaneri said.

But that packaging won't hurt the software industry at all, he added. Software houses will work out some agreements with the minicomputer vendors, except IBM, he predicted.

If IBM got into packaged software for its hardware, then it would hurt any software company because of its massive funding and sales organization, he said.

However, Colaneri believes packaged software is not an area which IBM wants to enter.

The role of software houses in the mainframe market is defined by the need of large machines to increase their computing power, "and that's where software comes in," he said.

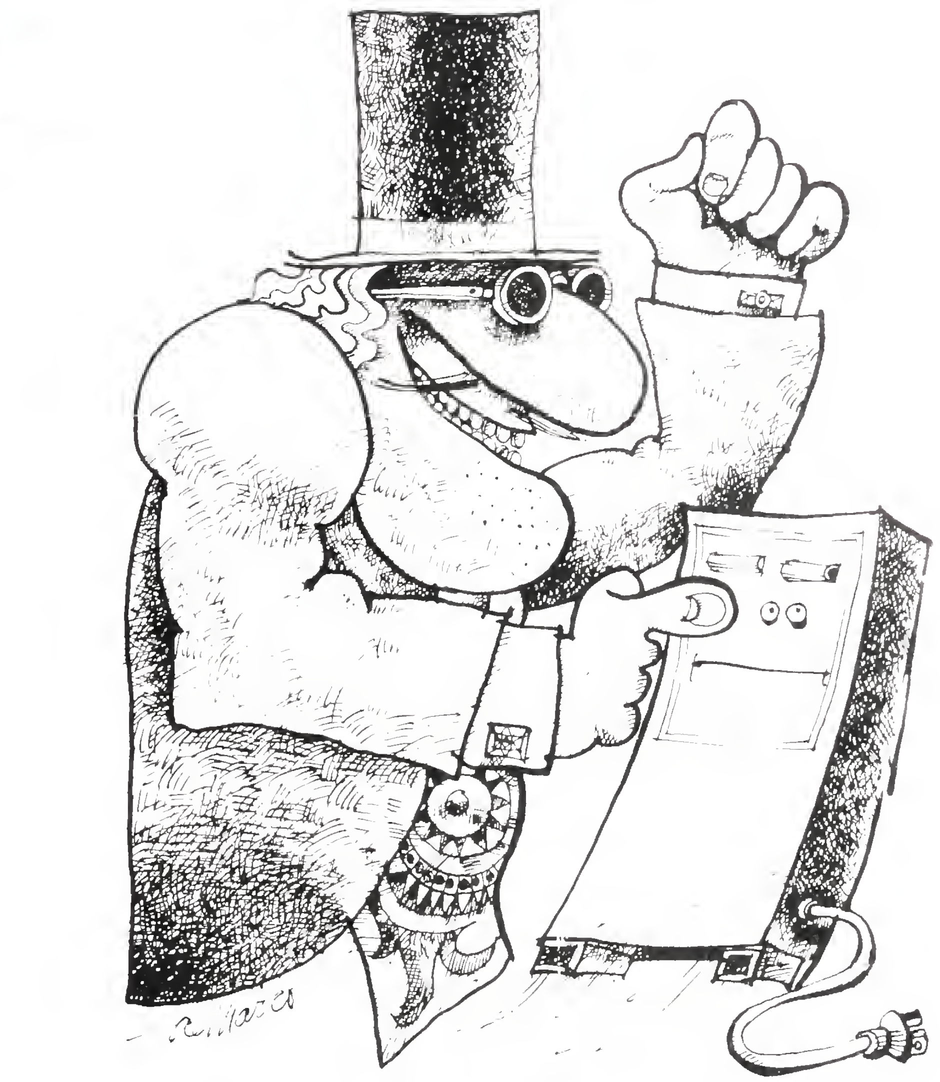
"The software houses must create interfaces independently [of the hardware vendors] to maintain a much more flexible and applicable piece of software," he said.

BGS Systems Formed As CPE Consultants

LINCOLN, Mass. – Three Harvard Ph.D.s who comprised the nucleus of an internal consulting group for Honeywell Information Systems' senior management have established BGS Systems, Inc., a consulting firm here specializing in computer performance evaluation (CPE).

Harold S. Schwenk Jr. is president of BGS. Jeffrey P. Buzen and Robert P. Goldberg are vice-presidents.

BGS can be reached through Box 128, Lincoln, Mass. 01773.



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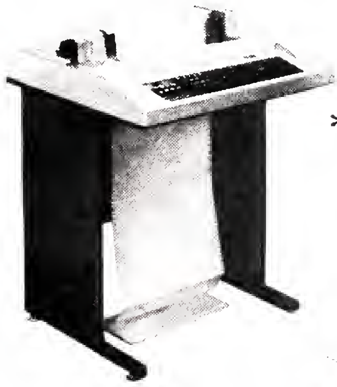

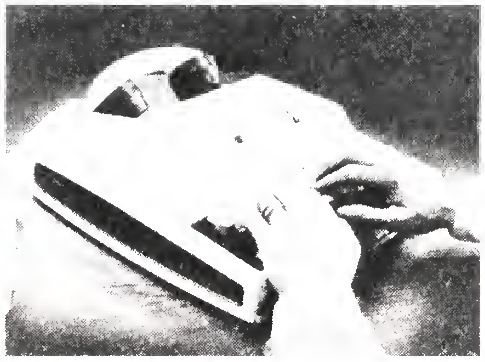

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Executive Corner

- John L. Curry Jr. has been elected president of MIS, Inc.
- Frederic J. Robbins has been elected to the board of directors of Electronic Memories and Magnetics Corp.
- Gerald S. Newton has been appointed director of media deelopment at Information Terminals Corp.
- Donald D. Winstead has been named director of marketing for the Microsystems Division of the Instrument Systems Group at Fairchild Camera and Instrument Corp.
- Richard F. Musson has been named vice-president of marketing at Technology Marketing, Inc.
- Thomas A. Loose has been elected vice-president of Recognition Equipment, Inc. and will continue to serve as secretary and general counsel for the company.
- J.J. Burke has been named vice-president of western operations for Univac.
- M. James Arachtingi has been named vice-president of pricing at Control Data Corp.
- Jack Robinson has been named vice-president and midwest regional manager of International Computer Equipment, Inc.
- Peter B. Heyler has been named chief financial officer of Okidata Corp.
- Theodore W. Robinson Jr. has been appointed executive vice-president of Optical Scanning Corp.
- Clarence W. Rife has been appointed vice-president of customer service at Scan-Optics, Inc.
- Julian Sanchez has been appointed vice-president of manufacturing of Western Peripherals, Inc.

Sperry Results Hit Record High; Univac Sales Rise 11% in '75

NEW YORK – Record earnings for the final quarter and year were the story at Sperry Rand Corp.

Revenues from Univac's computer-related products and services rose 11% to more than $1.4 billion during the year.

New orders for computer systems increased 9% to $1.25 billion for the year; commercial computer bookings in the fourth quarter were up 19% over what the firm termed a strong fourth quarter last year.

The worldwide installed base of computer systems grew 15% in fiscal 1976 to $7.4 billion and has been growing at a compound annual rate of more than 19% in the past five years, the company said.

For the year, Sperry's earnings rose 16% to nearly $145.3 million or $4 a share compared with $125.2 million or $3.54 a share last year, when there was a $5.4 million gain from the sale of land.

Revenues rose 5% to $3.2 billion compared with $3 billion in fiscal 1975.

In the fourth quarter, earnings rose 12% to $41.2 million or $1.08 a share compared wtih $36.8 million or $1.04 a share in the same period last year.

Revenues increased by almost 9% to $894.6 million compared with $823.2 million in the 1975 period.

Earnings in the previous periods were restated to reflect foreign exchange gains and losses as incurred. These included a charge of nearly $3.5 million in the recent quarter compared with a $1.7 million charge in the year-ago period.

For the year, Sperry recorded a $2.8 million gain compared with a $6.2 million charge in 1975.

'Consistent Growth'

"For the full year, we maintained consistent earnings growth in a poor economy through strong performances in computers, farm equipment and defense systems," according to J. Paul Lyet, Sperry Rand chairman.

"We believe the business climate for capital goods will continue to improve, although somewhat slowly. The order backlog at March 31, 1976 was $1.8 billion, about the same level as a year ago," he said.

Farm equipment orders were up in the fourth quarter by 57% and revenues for the year increased 16%, the firm said.

Although bookings for fluid power business were down in the early months, they rose 78% over those of the year-ago fourth quarter.

The Office Equipment Division reduced its losses as unprofitable lines were dropped and restructuring of the business continued, the firm said.

Sperry Remington's shaver and personal care products moved from a loss last year to a small profit in 1976. Revenues were about the same as last year for Sperry Division while Sperry Flight Systems revenue rose 20%.

The firm managed to reduce inventories by $140 million or 14.5% in the year to $825 million compared with $965 million last year.

"Looking ahead, we believe the economic recovery will continue, faster in some countries than in others," Lyet said.

"The impact of economic forces such as the recent monetary disturbances remains uncertain and may affect our quarter-to-quarter earnings in the months ahead.

"But barring major economic disruptions, our plans call for continued earnings growth in fiscal 1977," he added.

DPers' Achievements Receive Recognition

Several DPers were among those recognized for achievements in various areas recently. William R. Hewlett and David Packard, president and chairman of the board, respectively, of Hewlett-Packard Co., were named recipients of the Vermilye Medal of the Franklin Institute.

The medal is awarded in recognition of outstanding accomplishment in industrial management.

Leo Esaki, IBM fellow and manager of device research at IBM Thomas J. Watson Research Center, has been elected as a foreign associate of the National Academy of Sciences.

Charles P. Lecht, president and chairman of Advanced Computer Techniques, Inc., was the only representative from the computer industry to be named by the Gallagher Presidents' Report as one of the 10 "best corporate chief executives of achievement for 1975."

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Earnings Reports

CUBIC
Year Ended Dec. 31

	1975	1974
Shr Ernd	$1.22	.....
Revenue	92,394,502	$74,512,605
Earnings	2,687,467	(1,096,868)
3 Mo Shr	.54	.....
Revenue	28,623,913	16,952,763
Earnings	1,176,263	(2,007,519)

DATA GENERAL
Three Months Ended March 13

	1976	1975
Shr Ernd	$.42	$.35
Revenue	34,089,000	24,639,000
Earnings	4,018,000	2,866,000
6 Mo Shr	.79	.70
Revenue	63,112,000	48,758,000
Earnings	7,519,000	5,682,000

APPLIED DIGITAL DATA SYSTEMS
Three Months Ended Feb. 29

	1976	1975
Shr Ernd	$.25	$.14
Revenue	4,999,891	3,269,240
Earnings	969,437	512,906

BOOTHE COMPUTER
Year Ended Dec. 31

	1975	1974
Shr Ernd	$1.09	.....
Revenue	41,033,000	$38,094,000
Disc Op	(734,000)	(457,000)
Spec Cred	a3,824,000	.....
Earnings	4,241,00	(3,550,000)

a-Gain from extinguishment of debt.

ADDRESSOGRAPH-MULTIGRAPH
Three Months Ended Jan. 31

	1976	a1975
Shr Ernd	$.13	$.12
Revenue	134,886,000	143,183,000
Earnings	1,011,000	967,000
6 Mo Shr	.19	.22
Revenue	268,714,000	283,206,000
Earnings	1,562,000	1,782,000

a-Restated to reflect accounting change for translation of foreign currency.

MILGO ELECTRONICS
Three Months Ended Dec. 31

	1975	1974
Shr Ernd	$.21	$.71
Revenue	9,094,000	10,207,000
Earnings	360,000	1,176,000

COMPUTERVISION
Year Ended Dec. 31

	1975	1974
Shr Ernd	.....	$.71
Revenue	$21,645,000	25,222,000
Earnings	(4,134,000)	1,636,000
3 Mo Shr	.01	.05
Revenue	5,899,000	5,870,000
Earnings	22,000	116,000

SCIENTIFIC SOFTWARE
Year Ended Dec. 31

	1975	1974
Shr Ernd	$.49	$.50
Revenue	4,807,000	3,726,000
Spec Cred	278,000	312,000
Earnings	585,000	619,000

SYNCOM
Three Months Ended Dec. 31

	1975	1974
Shr Ernd	$.03	.....
Revenue	1,167,221	$830,049
Earnings	51,118	6,438
9 Mo Shr	.08	.01
Revenue	2,999,293	2,148,384
Earnings	143,797	28,761

WYLY
Year Ended Dec. 31

	1975	a1974
Revenue	$66,149,000	$75,373,000
Disc Op	(31,701,000)	(13,291,000)
Loss	52,246,000	15,306,000

a-Restated.

COMPUTER USAGE
Three Months Ended Dec. 31

	1975	1974
Shr Ernd	.....	$.22
Revenue	$1,913,128	1,066,522
Tax Cred	.....	82,000
Earnings	(177,142)	173,853

BRADFORD COMPUTER & SYSTEMS
Year Ended Dec. 31

	a1975	b1974
Shr Ernd	$1.02	$.53
Revenue	67,391,000	59,006,000
Tax Cred	78,000	103,000
Earnings	4,118,000	2,129,000
3 Mo Shr	.27	.....
Revenue	16,728,000	16,422,000
Tax Cred	.....	96,000
Earnings	1,067,000	(606,000)

a-Preliminary. b-Reflects net charges of $1.81 million in the year and $1.74 in the quarter resulting from provisions for loss on a clearance account and on sale of several minority investments.

COMPUTER CONSOLES
Year Ended Dec. 31

	1975	1974
Shr Ernd	$.60	$.94
Revenue	8,466,176	9,208,404
Tax Cred	450,947	835,000
Earnings	1,054,540	1,638,030

DATA DIMENSIONS
Year Ended Dec. 31

	1975	1974
Shr Ernd	$.61	$.61
Revenue	5,267,000	4,316,000
Tax Cred	50,000	242,000
Earnings	474,000	492,000

DATA 100
Year Ended Dec. 31

	1975	1974
Shr Ernd	$1.59	$1.57
Revenue	95,851,000	69,720,000
Tax Cred	1,451,000	1,785,000
Earnings	5,694,000	4,847,000
3 Mo Shr	.24	.50
Revenue	27,855,000	21,623,000
Spec Item	a(587,000)	b452,000
Earnings	854,000	1,608,000

a-Reversal of tax-loss carryforward credit. b-Tax-loss carryforward.

DATUM
Year Ended Dec. 31

	1975	1974
Shr Ernd	$.03	$.08
Revenue	13,503,134	14,559,328
Tax Cred	32,000	.....
Earnings	58,721	124,536

ELECTRONIC ASSISTANCE
Year Ended Jan. 31

	1976	a1975
Shr Ernd	$.58	$.47
Revenue	36,711,000	38,614,000
Disc Op	4,000	6,000
Tax Cred	394,000	349,000
Earnings	1,095,000	889,000

a-Restated to reflect discontinued operations.

GENERAL AUTOMATION
Three Months Ended Jan. 31

	1976	1975
Shr Ernd	$.08	.....
Revenue	18,293,000	$14,021,000
Tax Cred	75,000	.....
Earnings	186,000	(2,057,000)
6 Mo Shr	.08	.....
Revenue	33,286,000	28,214,000
Tax Cred	75,000	.....
Earnings	193,000	(1,880,000)

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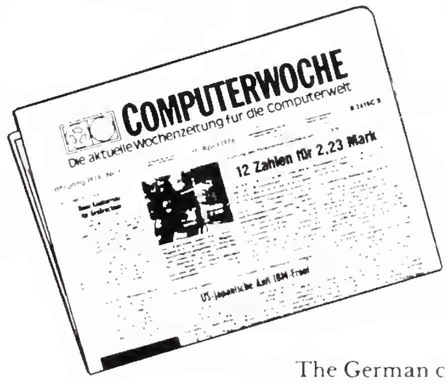
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IDC Deutschland (one of Germany's largest market research and consulting firms) projects that the average growth rate of computer systems sales in Germany will be 14% through 1977; but the growth of certain segments of the market will be much greater. The rate for minicomputers and data communication terminals will be more than 30%. Software and services will experience an annual increase of 20-30%, while data entry equipment is expected to show a sales increase of 25% per year.

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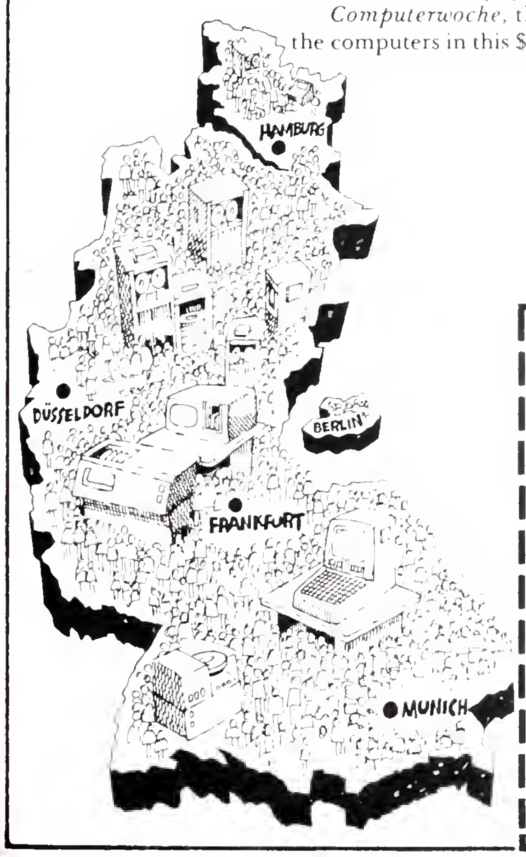

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Required qualifications are:

1. Previous management experience in a computing center with a 370/145 or larger.
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Deadline for application receipt is May 24, 1976.

Apply to: Personnel Office, University of Alabama in Birmingham, Birmingham, AL 35294.

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The principal qualification is interest in, and familiarity or experience with, computer networking for education and research. Other necessary qualifications are ability to manage affairs of NERComP and supervise its employees. Candidates should be able to write well and meet with staffs and faculties of member institutions to discuss common issues and problems of networking. Salary range $22,000 to $26,000 annually, depending on qualifications and experience. Interested persons should send their resumes before 15 May 1976 to Mr. John Alman, Secretary of the Corporation, NERComP, Inc., 40 Grove Street, Wellesley, MA 02181.

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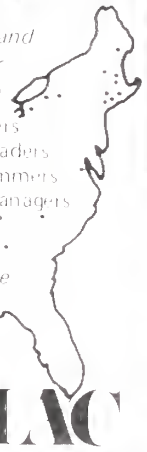

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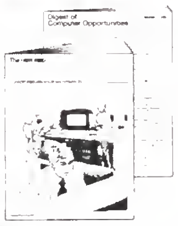

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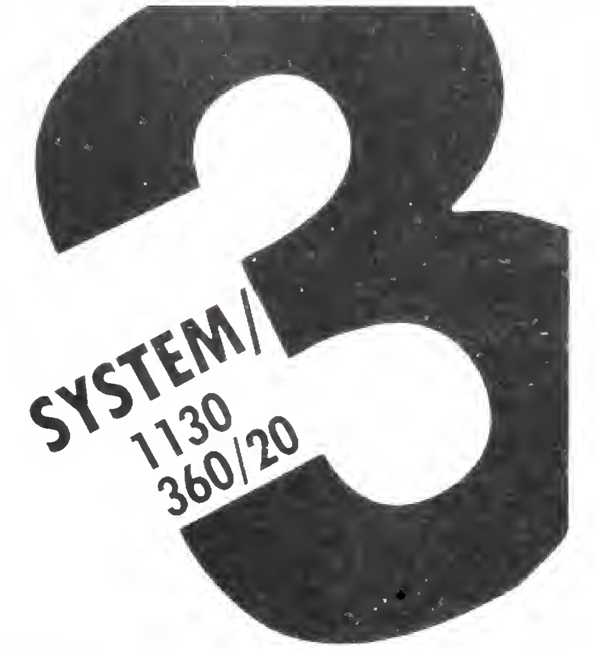

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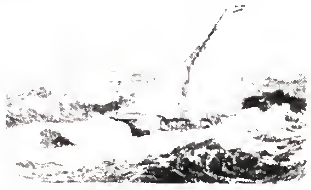

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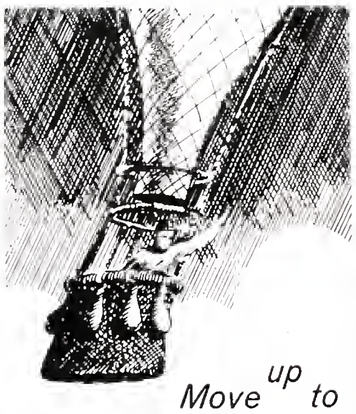

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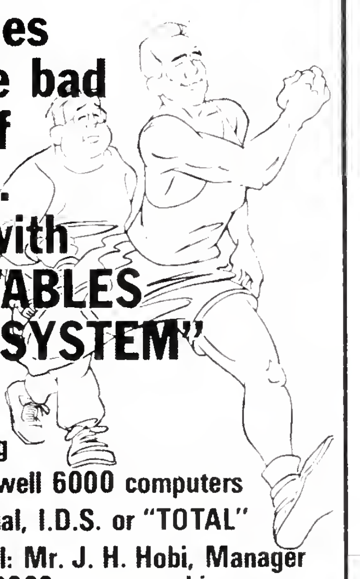

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Nickels and Dimes

Information Terminals has obtained a $2.1 million revolving line of credit from Bank of America as well as a lease line of $210,000 for purchases of manufacturing and test equipment.

$ $ $

IBM declared a regular quarterly dividend of $1.75 per share payable June 10 to stockholders of record May 12.

$ $ $

Tratec. Inc. will pay its first cash dividend of 6 cents a share June 25 to stockholders of record May 13.

$ $ $

Itel Corp. will pay 5 cents a share May 28 to stockholders of record May 7.

$ $ $

North American Corp. of New York has agreed to buy $5 million of **General Computer/Systems, Inc.** equipment as it is placed on noncancellable 18- to 36-month leases.

$ $ $

Datapoint Corp. President H.E. O'Kelley indicated he expects third-quarter earnings to be 110% to 120% ahead of those of the same period last year.

$ $ $

Greyhound Corp. plans to acquire the 16% of the shares of **Greyhound Computer Corp.** it doesn't hold. It accomplished through an exchange of stock, the unit will be merged into a new subsidiary.

Decision Data Computer Corp. President Loren A. Schultz expects a "substantial loss" for 1975. Year-end results have been delayed because of difficulties stemming from litigation with International Engineering Ltd., its former European manufacturing affiliate, and from reconciliation of certain equipment leasing transactions.

$ $ $

Informatics, Inc.'s 1975 revenues rose 19% to $39.4 million from $33.1 million in 1974.

$ $ $

Pertec Corp. now has a revolving line of credit up to $37 million through Sept. 30, 1979. The firm is changing its fiscal year from June 25, 1976 to March 26. The new date will distinguish the impact of the acquisition of Computer Machinery Corp.

$ $ $

Mohawk Data Sciences Corp. has extended for the second time the date for its offer to swap the $550 principal amount of new 12% convertible subordinated debentures, due 1989, for each $1,000 principal amount of its 5.5% convertible subordinated debentures due Dec. 15, 1994.

$ $ $

Data Dimensions, Inc. netted a $190,000 gain from the sale of its portfolio of IBM 360 equipment during the first half of 1976. Part of the gain will be deferred.

DEC Results Climb 63% in Nine Months

MAYNARD, Mass. – Digital Equipment Corp. turned in record sales and earnings for the third quarter and nine months as earnings climbed 67% and 63% respectively over those in the comparable year-ago periods.

During the third quarter, operating revenues rose 42% to $191.2 million compared with $134.6 million in the same period last year.

Service and other revenues accounted for $39.3 million of the total, up 41% over the $27.9 million reported in the year-ago quarter.

Earnings totaled $18.9 million or $1.53 a share compared with $11.3 million or 95 cents a share.

For the nine months, DEC's operating revenues rose 35% to $504.3 million compared with $373.2 million in the year-ago period.

Service and other revenues amounted to $105.1 million, up 49% over the $70.5 million in last year's nine months.

Earnings rose to nearly $46.6 million or $3.83 a share compared with $28.6 million or $2.39 a share.

The strong pace of new business in most markets is progressing both in the U.S. and abroad, DEC said.

The firm plans to accelerate its manufacturing plant expansion and increase its workforce, which currently numbers more than 22,900.

Commercial and OEM sales were strong during the period and sales to the industrial market improved, DEC said.

Itel Reaps Best First Quarter Yet With Revenues Growing Nearly 50%

SAN FRANCISCO – Itel Corp. reported the highest first-quarter results in its history for the three months ended March 31.

Earnings totaled a record $2.7 million or 34 cents a share compared with $2.1 million or 22 cents a share in the year-ago period.

Revenues for the quarter also reached record levels, totaling $56.1 million, an increase of nearly 50% over the $38.2 million reported for the comparable 1975 period.

"Itel's strong first-quarter results are indicative of the record performance which our company expects to achieve for the year as a whole," according to Peter S. Redfield, Itel president.

"This is attributable mainly to the continuing improvement in world trade and the growing recovery of demand for the leveraged leasing of capital equipment," he said.

"For the first three months of 1976, all of Itel's operating groups achieved stable or improving performances relative to last year at this time," Redfield stated.

Sees Record Year

In all, Itel should have another record year with per-share earnings increasing more rapidly than operating gains because of some restructuring of the company which took place last year, he said.

Revenues from on-line services accounted for about 25% of revenues from Itel's Data Services Group during 1975 and Redfield said he expects this proportion to continue to increase.

Modcomp Net Dips in Quarter

FORT LAUDERDALE, Fla. – Modular Computer Systems, Inc. (Modcomp) cut its first-quarter earnings by almost half compared with the year-ago figures.

"The decline in earnings for the period was due to a planned increase in expenditures, particularly in the areas of sales and support, including the related overhead functions, investments we felt were essential to enable Modcomp to achieve the growth we anticipate during the second half of 1976," according to the firm's president, Kenneth G. Harple.

ECS Impact

Expenses to be incurred by Modcomp as a result of its impending acquisition of ECS Information Systems, a supplier of turnkey computer systems for small business applications, will slightly impact earnings during the second and third quarters, he added.

"We expect Modcomp's efforts in the business systems marketplace will become profitable during the fourth quarter," Harple said.

Earnings dropped to $280,000 or 10 cents a share during the quarter compared with $548,000 or 19 cents a share in the same period last year.

Revenues rose to $9.8 million compared with nearly $8.7 million in the year-ago quarter.

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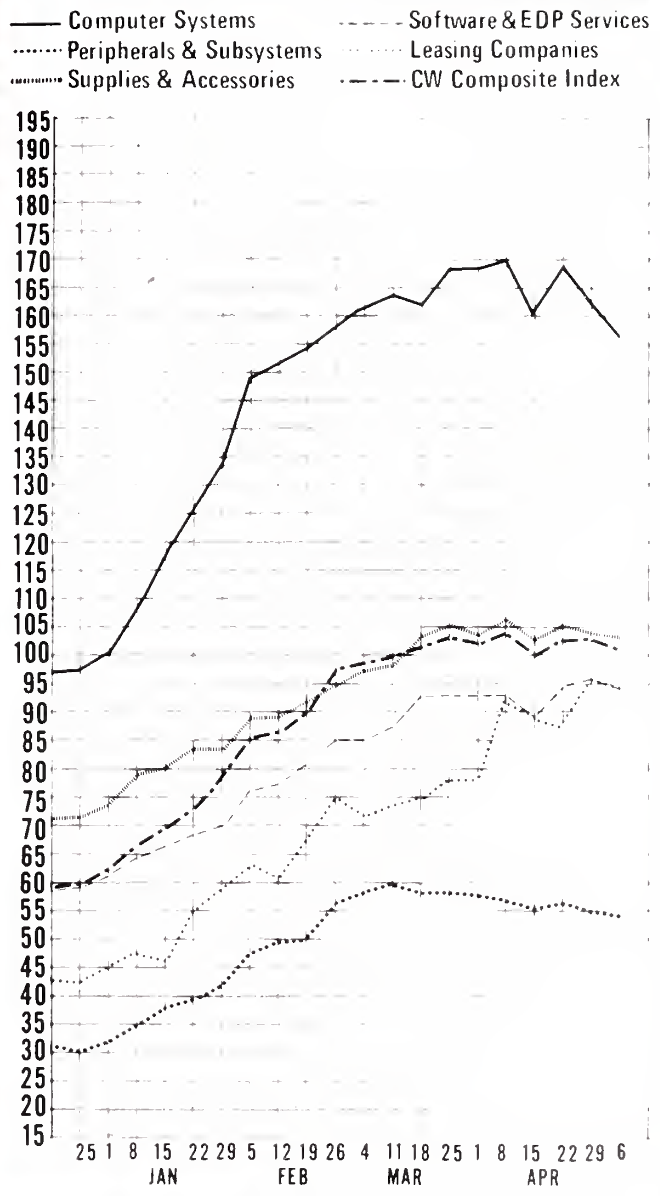

Earnings Reports

COMPUTER INVESTORS GROUP

Three Months Ended Dec. 31

	1975	a1974
Shr Ernd	$.46	.....
Revenue	7,925,508	$7,679,233
Earnings	994,239	(759,033)
9 Mo Shr	.95	.....
Revenue	22,265,464	22,174,962
Earnings	2,066,882	(1,922,735)

a-Restated to reflect change in accounting for foreign currency translation.

MSI DATA

Three Months Ended Dec. 27

	1975	a1974
Shr Ernd	.....	$.24
Revenue	$7,882,862	9,352,583
Disc Op	.....	(176,881)
Earnings	2,663	472,042
9 Mo Shr	.....	.62
Revenue	23,310,556	25,186,520
Disc Op	(1,564,354)	(605,894)
Spec Cred	.....	b99,985
Earnings	(1,119,409)	1,214,292

a-Restated to reflect discontinued operations. b-Cumulative effect of accounting change.

PRIME COMPUTER

Year Ended Dec. 31

	1975	1974
Shr Ernd	$.34	.....
Revenue	11,387,000	$6,530,000
Tax Cred	370,000	9,000
Earnings	692,000	(532,000)
3 Mo Shr	.14	.01
Revenue	3,477,000	2,077,000
Tax Cred	158,000	(33,000)
Earnings	281,000	14,000

TALLY

Year Ended Dec. 28

	1975	1974
Shr Ernd	$.43	$.01
Revenue	21,523,000	17,794,000
Tax Cred	412,000	23,000
Earnings	1,017,000	33,000
3 Mo Shr	.20	.....
Revenue	6,216,000	4,836,000
Tax Cred	274,000	20,000
Earnings	479,000	(78,000)

GRAPHIC CONTROLS

Year Ended Dec. 31

	1975	1974
Shr Ernd	$2.94	$2.30
Revenue	41,522,000	40,780,000
Earnings	a2,702,000	1,901,000

a-Includes $353,000 from sale of investments.

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TRADE*QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 5, 1976

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		PRICE 1975-76 RANGE (1)	CLOSE MAY 5 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	62-109	101 7/8	-3 1/2	-3.3
O	COMPUTER AUTOMATION	2- 19	16 3/8	- 1/4	-1.5
N	CONTROL DATA CORP	11- 27	21 3/4	-1	-4.3
N	DATA GENERAL CORP	19- 60	53 1/4	-4 1/4	-7.3
O	DATAPOINT CORP	6- 41	39 1/2	- 1/2	-1.2
O	DIGITAL COMP CONTROL	1- 4	3 3/8	0	0.0
N	DIGITAL EQUIPMENT	46-191	166 3/4	-11 1/2	-6.4
N	ELECTRONIC ASSOC.	2- 5	3 1/4	- 5/8	-16.1
A	ELECTRONIC ENGINEER.	5- 16	14 5/8	- 1/4	-1.6
N	FOXBORO	23- 42	38	+1 3/4	+4.6
O	GENERAL AUTOMATION	4- 14	9 5/8	- 3/8	-3.7
O	GRI COMPUTER CORP	1- 1	1/2	0	0.0
N	HEWLETT-PACKARD CO	58-120	106 3/8	-4 3/8	-3.9
N	HONEYWELL INC	22- 56	43 3/4	-1 1/2	-3.3
N	IBM	158-272	250	-6	-2.3
O	MANAGEMENT ASSIST	1- 3	2 1/8	0	0.0
O	MEMOREX	1- 33	31	-2	-6.4
O	MICRODATA CORP	2- 26	22 1/2	-1 1/4	-5.3
O	MODULAR COMPUTER SYS	5- 19	9 1/4	- 1/4	-2.6
N	NCR	15- 35	26 3/4	+ 3/8	+1.4
O	PRIME COMPUTER INC	2- 11	9 1/4	- 1/4	-2.6
N	PERKIN-ELMER	16- 30	20 1/4	-1 1/8	-5.2
N	RAYTHEON CO	26- 59	51 1/8	-1 3/8	-2.6
N	SPERRY RAND	26- 50	47 5/8	- 3/8	-0.7
O	SYCOR INC	5- 31	24 1/2	-2 1/2	-9.2
A	SYSTEMS ENG. LABS	1- 10	8 1/2	- 3/8	-4.2
N	VARIAN ASSOCIATES	7- 18	14 1/4	- 3/4	-5.0
A	WANG LABS.	7- 20	13 1/8	- 1/4	-1.8

LEASING COMPANIES

EXCH		PRICE 1975-76 RANGE (1)	CLOSE MAY 5 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMDISCO INC	1- 10	7 3/4	- 3/4	-8.8
A	COMMERCE GROUP CORP	2- 4	2 3/4	- 1/8	-4.3
A	COMPUTER INVSTRS GRP	1- 3	1 7/8	+ 1/8	+7.1
M	DATRONIC RENTAL	0- 1	3/4	0	0.0
A	DCL INC	0- 1	3/4	+	+9.3
N	DPF INC	3- 7	6	0	0.0
O	EDP RESOURCES	1- 2	1	0	0.0
A	GREYHOUND COMPUTER	2- 7	7 1/8	- 1/8	-1.7
N	ITEL	3- 13	11 3/8	- 1/2	-4.2
N	LEASCO CORP	4- 14	12 1/2	+ 3/8	+3.0
O	LEASPAC CORP	0- 1	1/4	0	0.0
O	LECTRO MGT INC	1- 1	1/8	0	0.0
P	NRG INC	0- 4	3/4	- 1/8	-14.2
A	PIONEER TEX CORP	2- 8	7 5/8	+ 1/4	+3.3
A	ROCKWOOD COMPUTER	1- 1	1/8	0	0.0
N	U.S. LEASING	7- 14	10	-1	-9.1

SOFTWARE & EDP SERVICES

EXCH		PRICE 1975-76 RANGE (1)	CLOSE MAY 5 1976	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	1 1/2	+ 1/8	+9.0
A	APPLIED DATA RES.	1- 10	2 7/8	0	0.0
N	AUTOMATIC DATA PROC	29- 67	61 5/8	-4 7/8	-7.3
O	BRANDON APPLIED SYST	1- 1	1/8	0	0.0
O	COLEMAN AMERICAN COS	4- 6	3 7/8	- 1/4	-6.0
O	COMPUTER DIMENSIONS	2- 7	4 7/8	-1 1/8	-18.7
O	COMP ELECTION SYSTMS	3- 9	7 1/2	- 3/4	-9.0
O	COMPUTER HORIZONS	1- 1	1 3/4	0	0.0
O	COMPUTER NETWORK	1- 6	5 3/8	0	0.0
N	COMPUTER SCIENCES	2- 9	6 1/4	- 3/8	-5.6
O	COMPUTER TASK GROUP	1- 1	1	0	0.0
O	COMPUTER USAGE	2- 6	5 5/8	0	0.0
O	COMSHARE	2- 7	6 1/4	- 1/4	-3.8
O	DATATAB	1- 2	1	0	0.0
A	ELECT COMP PROG	1- 1	1/8	0	0.0
N	ELECTRONIC DATA SYS.	11- 22	14 3/8	+1 7/8	+15.0
O	INFORMATIONAL INC	1- 1	1/8	0	0.0
O	IPS COMPUTER MARKET.	1- 1	1 1/2	0	0.0
O	KEANE ASSOCIATES	2- 3	3 1/8	0	0.0
O	KEYDATA CORP	2- 5	2 3/4	- 1/8	-4.3
O	LOGICON	3- 5	4	0	0.0
A	MANAGEMENT DATA	1- 3	2 1/2	0	0.0
A	NATIONAL CSS INC	6- 25	19 1/4	-1 1/4	6.0
O	NATIONAL COMPUTER CO	1- 1	1/8	0	0.0
A	ON LINE SYSTEMS INC	2- 22	19 1/8	- 7/8	-4.3
N	PLANNING RESEARCH	2- 6	3 1/4	- 1/4	-7.1
O	PROGRAMMING & SYS	1- 1	1/2	0	0.0
O	RAPIDATA INC	2- 5	2 7/8	- 1/4	-8.0
O	REYNOLDS & REYNOLDS	10- 24	18	+ 1/4	+1.4
O	SCIENTIFIC COMPUTERS	1- 1	3/4	0	0.0
O	SIMPLICITY COMPUTER	1- 1	1	0	0.0
N	TYMSHARE INC	7- 23	25	- 1/2	-1.9
A	UPS SYSTEMS	2- 5	3 1/2	- 1/2	-12.5
N	WYLY CORP	2- 7	4 1/4	- 1/2	-10.5

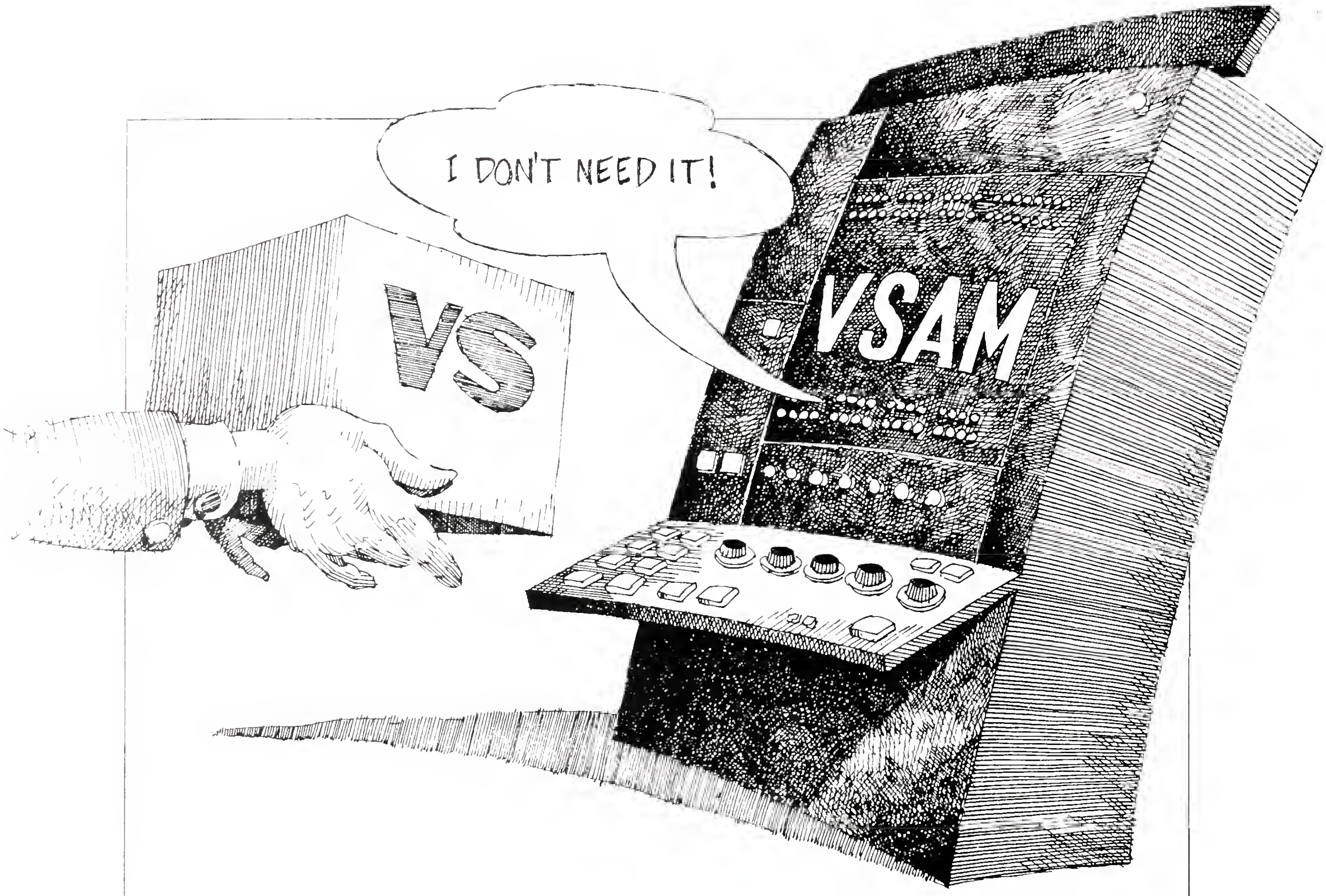
PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1975-76 RANGE (1)	CLOSE MAY 5 1976	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	4- 13	9	- 3/8	-4.0
O	ADVANCED MEMORY SYS	1- 10	6 7/8	- 3/4	-9.8
N	AMPEX CORP	3- 8	7 1/4	+ 1/4	+3.5
O	ANDERSON JACOBSON	1- 4	3 1/8	0	0.0
O	BEEHIVE MEDICAL ELEC	1- 6	5 1/4	0	0.0
A	BOLT,BERANEK & NEW	5- 13	7 7/8	+ 1/8	+1.6
N	BUNKER-RAMO	4- 8	5 1/2	- 1/4	-4.3
A	CALCOMP	3- 7	4 1/2	0	0.0
O	CAMBRIDGE MEMORIES	1- 6	3 7/8	- 1/2	-11.4
N	CENTRONICS DATA COMP	7- 36	34 1/2	- 5/8	-1.7
O	CODEX CORP	15- 42	33 1/2	0	0.0
O	COGNITRONICS	1- 2	1	0	0.0
O	COMPUTER COMMUN.	1- 5	4 7/8	0	0.0
O	COMPUTER CONSOLES	3- 7	5 1/2	- 1/2	-8.3
A	COMPUTER EQUIPMENT	1- 3	2	0	0.0
O	COMPUTER TRANSCEIVER	1- 2	1 1/4	- 1/4	-16.6
O	COMTEN	2- 9	7 7/8	+ 1/8	+1.6
N	CONRAC CORP	12- 30	23 1/2	- 1/8	-0.5
[illegible]	DATA ACCESS SYSTEMS	1- 3	[illegible]	+ 1/4	[illegible]
[illegible]	DATA 100	5- 16	[illegible]	-1 1/4	-11.7
A	DATA PRODUCTS CORP	[illegible]- 11	[illegible]	- 1/2	-4.[illegible]
O	DATA TECHNOLOGY	1- 3	1 3/4	[illegible]	[illegible]
O	DATUM INC	1- 2	[illegible]	+ 1 [illegible]	+14.[illegible]
O	DECISION DATA COMPUT	[illegible]- 7	[illegible] 1/2	+ [illegible]	+[illegible]
O	DELTA DATA SYSTEMS	1- 1	[illegible]		[illegible]
O	DI/AN CONTROLS	1- 1	1		[illegible]
N	ELECTRONIC M & M	1- 3	[illegible]		[illegible]
O	FABRI-TEK	1- 1	[illegible]		[illegible]
O	GENERAL COMPUTER	1 [illegible]	1	- 1/4	[illegible]
A	HAZELTINE CORP	[illegible]- 1[illegible]	[illegible]	[illegible]	[illegible]
N	HARRIS CORP	[illegible]- 47	[illegible]		[illegible]
A	[illegible] CORP	[illegible]	[illegible]	[illegible]	[illegible]
O	INFOREX INC	[illegible]- 7	[illegible] 1/4	- 1/4	[illegible]
O	INFORMATION INTL INC	[illegible]- 1[illegible]	1[illegible] 7/8	+ [illegible]	+[illegible]
O	INTEL CORP	[illegible]	[illegible]1	-2	-2.7
A	LUNDY ELECTRONICS	[illegible]- 7	[illegible]	- 1/[illegible]	-[illegible]
O	MSI DATA CORP	[illegible]- 1	[illegible]	+ 1/[illegible]	+4.[illegible]
A	MILGO ELECTRONIC	[illegible]	[illegible]	+1 [illegible]	+11.[illegible]
N	MOHAWK DATA SCI	1- 7	[illegible]	- 1/[illegible]	-4.[illegible]
O	OPTICAL SCANNING	1- [illegible]	[illegible]		[illegible]
O	[illegible] CORP	1- [illegible]	[illegible]	[illegible]	[illegible]
A	[illegible]	[illegible]	[illegible]	- 1/[illegible]	-4.[illegible]
A	POTTER INSTRUMENT	[illegible]	1 [illegible]		[illegible]
O	PRECISION INST.	[illegible]- 1[illegible]	7		-[illegible]
O	QUANTOR CORP	[illegible]	[illegible]	+ 1/[illegible]	+[illegible]
O	RECOGNITION EQUIP	[illegible]- 11	[illegible]	- 1/[illegible]	-[illegible]
N	SANDERS ASSOCIATES	[illegible]- 11	10	- 1/[illegible]	-1.[illegible]
O	SCAN DATA	1- [illegible]	[illegible]	[illegible]	-1[illegible]
O	STORAGE TECHNOLOGY	[illegible]- 1[illegible]	1[illegible]		[illegible]
	T-BAR INC	[illegible]	[illegible]	[illegible]	+[illegible]
	TALLY CORP.	1- [illegible]	[illegible]	- 1/[illegible]	[illegible]
	TEC INC	1- [illegible]	[illegible]	- 1/4	[illegible]
	TEKTRONIX INC	[illegible]	[illegible]	-1 [illegible]	-[illegible]
A	TELEX	1- [illegible]	[illegible]	- 1/[illegible]	-[illegible]
O	WANGCO INC	[illegible]- [illegible]	[illegible] 1/[illegible]	-1	-[illegible]
	WILTEK INC	1- [illegible]	[illegible]	[illegible]	[illegible]

[illegible]

EXCH		PRICE 1975-76 RANGE (1)	CLOSE MAY 5 1976	WEEK NET CHNGE	WEEK PCT CHNGE
[illegible]	[illegible]	1- [illegible]	[illegible]	[illegible]	[illegible]
O	BALTIMORE BUS FORMS	[illegible]	[illegible]		[illegible]
A	BARRY WRIGHT	5- 1[illegible]	[illegible]		[illegible]
O	CYBERMATICS INC	0- 1	[illegible]		[illegible]
A	DATA DOCUMENTS	[illegible]	[illegible] 1/2	- 1/[illegible]	-[illegible]
O	DUPLEX PRODUCTS INC	1[illegible]- 25	1[illegible]	- 3/4	-[illegible]
N	ENNIS BUS. FORMS	[illegible]	[illegible]	[illegible]	[illegible]
O	GRAHAM MAGNETICS	[illegible]- 1[illegible]	[illegible] 1/2	- [illegible]	-[illegible]
O	GRAPHIC CONTROLS	[illegible]- 21	1[illegible] 1/4	[illegible]	[illegible]
N	3M COMPANY	[illegible]	[illegible]	-2 [illegible]	-[illegible].4
	MOORE CORP LTD	[illegible]- 51	[illegible]	- 1/4	-[illegible]
	NASHUA CORP	[illegible]	1[illegible] 1/[illegible]	+ [illegible]	+3.[illegible]
	STANDARD REGISTER	11- 20	1[illegible] 1/4		0.0
O	TAB PRODUCTS CO	[illegible]- 8	7 1/4	+ 1/4	+[illegible]
N	UARCO	17- 25	23	-1	-4.1
O	VANIER GRAPHICS CORP	4- 8	[illegible] 3/4	0	0.0
A	WABASH MAGNETICS	3- 8	6 3/4	+ 1/8	+1.8
N	WALLACE BUS FORMS	15- 25	22 7/8	+ 5/8	+2.8

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
I=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR



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